60-63 FEB 22 1944
Medical Library

Vol. LX. No. 222. AUTUMN, 1943.

The Bristol Medico-Chirurgical Journal

PUBLISHED UNDER THE AUSPICES OF

THE BRISTOL MEDICO-CHIRURGICAL SOCIETY.

Editor: J. A. NIXON, C.M.G., M.D., F.R.C.P.

WITH WHOM ARE ASSOCIATED

E. W. HEY GROVES, D.Sc., M.S., F.R.C.S.

A. E. ILES, O.B.E., M.B., B.S., F.R.C.S.

A. RENDLE SHORT, M.D., B.S., B.Sc., F.R.C.S.

W. MELVILLE CAPPER, M.B., B.S., F.R.C.S.

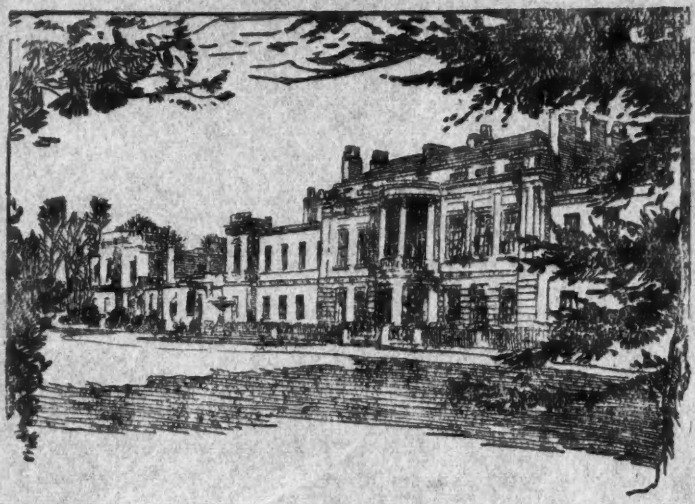
E. WATSON-WILLIAMS, M.C., Ch.M., F.R.C.S., *Assistant Editor.*

CONTENTS.

	Page
The Future of Health and Hospital Services from an Architect's Point of View. By CHARLES E. ELCOCK, F.R.I.B.A.	1
Social and Economic Conditions and the Incidence of Rheumatic Heart Disease. By G. H. DANIEL, D.Phil.	13
Reviews of Books	27
Editorial Notes	32
Obituaries: Emeritus Professor F. H. EDGEWORTH, M.A., M.D. (Cantab.), D.Sc. (Lond.)	33
RONALD HENRY TASKER, M.R.C.S., L.R.C.P.	35
JOHN LACY FIRTH, M.D., M.S.(Lond.), F.R.C.S. ..	36
The Medical Library of the University of Bristol	37
Publications Received	40
Local Medical Notes	41

BRISTOL:
J. W. ARROWSMITH LTD., QUAY STREET & SMALL STREET

Price Three Shillings net.



NORTHWOODS

Winterbourne, Bristol

This beautiful mansion in three hundred acres of delightful grounds and farm lands was built specially for the treatment of NERVOUS AND MENTAL AILMENTS, ALCOHOLISM AND DRUG ADDICTION.

Voluntary, temporary or certified patients of both sexes.

A few voluntary patients are also received in the Medical Superintendent's House.

Separate bedrooms. Private suites. Central heating. Electric light. Ample facilities for amusements and employment. Private golf course.

Thorough clinical, bacteriological and pathological examinations.

Occupational therapy. Visiting consultants. Garden and dairy produce from farm on the estate.

Cars meet trains at Temple Meads and Stapleton Road Stations. A private car or ambulance sent any distance day or night for patients.

Terms from 4 guineas a week.

TELEPHONE and TELEGRAPH: **WINTERBOURNE 18**

Medical Superintendent: JOSEPH CATES, M.D., B.S. (Lond.), D.P.H. (Camb).

M

THE F

You ha
Services
merely
garden
about a
But I c
untram
should
of your
more th
please p
appears

In n
pretty s
realizat
figured
Daily
prepare
than ma
he mus
needs
To do t
and co

The Bristol Medico-Chirurgical Journal

"Scire est nescire, nisi id me Scire alius sciret."

AUTUMN, 1943.

THE FUTURE OF HEALTH AND HOSPITAL SERVICES FROM AN ARCHITECT'S POINT OF VIEW.

BY

CHARLES E. ELCOCK, F.R.I.B.A.

(An Address given at Bristol, on November 27th, 1942).

YOU have honoured me by asking me to speak on "Modern Health Services" as the architect sees them. It would be a poor return if I merely made general remarks and said that "everything in the garden was lovely." It is probable that I may throw some bricks about and I may tread on many important toes and local prejudices. But I come to give you my very modest knowledge on the subject untrammelled by any local opinions or prejudices. If in any way I should be able to assist you in the formulation of a scheme worthy of your ancient city and of this very important district, I shall be more than rewarded; and if anything seems very controversial, please put it down to that proverbial coat-trailing propensity which appears to be associated with my exuberant Hibernian ancestry.

In many people's minds the work of the architect is limited to a pretty sketch or two and some nicely coloured plans. There is little realization that many working drawings are required, very carefully figured and showing every detail of the work. In a building like the *Daily Telegraph* offices in Fleet Street over 3,000 drawings were prepared in my office. But there is more in an architect's method than making dirty lines on clean paper. If he is to be a real creator, he must understand quite clearly the needs of his clients, both the needs of the individual client and the needs of the community. To do this he must keep his finger on the throbbing pulse of national and community life, and its needs and its wants. He must saturate

his mind with fine things in art, in music, in literature. He must thoroughly understand his architectural history and construction, and in addition he must study social life and its history, and then—he must put it all away into the treasure-house of his soul and out of a cultured and well-stored mind bring out of his treasure-house things new and old. But particularly new, for they must be touched with his own personality, which must ever be renewed, and so his creative work will be vitally alive. He may be criticized, he may be ostracized, but he will never be sterilized. So the architect coming to your great city, crammed full of history, romance, and the adventure of your great merchants, pullulating with a distinctive life of its own, feels again that in the wrecked streets and buildings of your city you have an opportunity of re-creation which has called to the forward-looking minds of your citizens with somewhat the same feelings of your great ancestors, who in the virgin lands and deserts across the great oceans saw visions of great opportunities and noble futures. So out of the desert of your wrecked city you are thinking and planning for your sons and daughters, for your grandsons and granddaughters, a fairer city than Bristol has ever known, retaining inviolate the soul of its people and all the historic associations in which this city is steeped. People are more important than buildings, and what goes on in buildings is more important than their outer husks.

Whatever plans are therefore made for the city they must not be little in scope and vision. There is no magic in littleness to stir the people's blood. It has been greatly said that "without vision the people perish," or, as Stephenson said, "many a man goes to sleep between the chimney pots and the telegraph wires." Between the comfort of the home fireside—(subject, of course, to the Fuel Controller !) and the claims of business, we must *not*—if we are to be worthy—allow these things to dull our vision of that great city which must arise out of the ruin which now exists. We must not be like Bunyan's "man with the muckrake," who kept on scrabbling about in the dirt, the scraping of his muckrake drowning the beating of the angel's pinions hovering over him—"an angel bearing a crown." Therefore your plans must be big, full of vision, perhaps only realizable bit by bit, but all related to the great conception of the whole. The whole thing full of the light in a great people's eyes, and crammed with the fire of the creative spirit of God. The humblest dweller in the smallest street, equally with the great merchant, must feel some sparkle of this starry vision.

Amongst the planning of more immediate activities must come the provision for the health of the community. To many people this may appear to consist of the provision of better and more co-ordinated hospitals with their clinical and other services. In Bristol you have many hospitals which have to some extent been haphazardly imposed on the city without co-ordination, and with

many amenities which might possibly have been *collected into one central building.* It may be that in planning for the future, existing and new hospitals under a co-ordinating Hospital Council will be arranged in close proximity to a New Hospital Centre convenient for medical students and contiguous or near to the University Medical School. With a central buying and supply department, and a central laundry for all the hospitals in the district, considerable economy might be effected both in administrative and staff costs, and in tenders for supplies for all hospitals in the area of the Divisional Council.

You have probably noted already that in a triangle which has a base approximately 490 yards long, and a height from base to apex of, say, 140 yards, there are five hospitals in central Bristol. The distance from the University Medical School to the centre of this triangle being, say, 300 yards, makes for the obvious consideration of a site in this area as being the possible site of any Medical Centre, if such was thought an essential part of the future hospital service. This Hospital centre, whilst having the usual special hospitals and their services closely planned and related, and including also a psychiatric centre for the study of incipient and acute mental cases, should also have as one of its main features a special centre for the study of preventive medicine and social hygiene, with its field service for extra-mural work and its essential research laboratories which would serve the district covered by the co-ordinating Hospital Council.

I do not know what is the actual area served by the Bristol and District Divisional Hospitals Council, but it will certainly include both urban and rural areas with very diversified needs and with hospitals both large and small which may be modern and well-equipped, or the reverse. It would, therefore, be an essential and urgent feature of any future activity that survey should be made of the area or district and a detailed report made from the point of view of the doctor, the nurse and the patient. This would require a technical survey by competent medical and surgical representatives, and a survey of each hospital by an architect—an expert in hospital planning. A hospital accountant would also be required to report on the accounting methods of each hospital and its financial standing. An experienced and competent medical-social worker would also prepare a social survey of industrial and living conditions in the district.

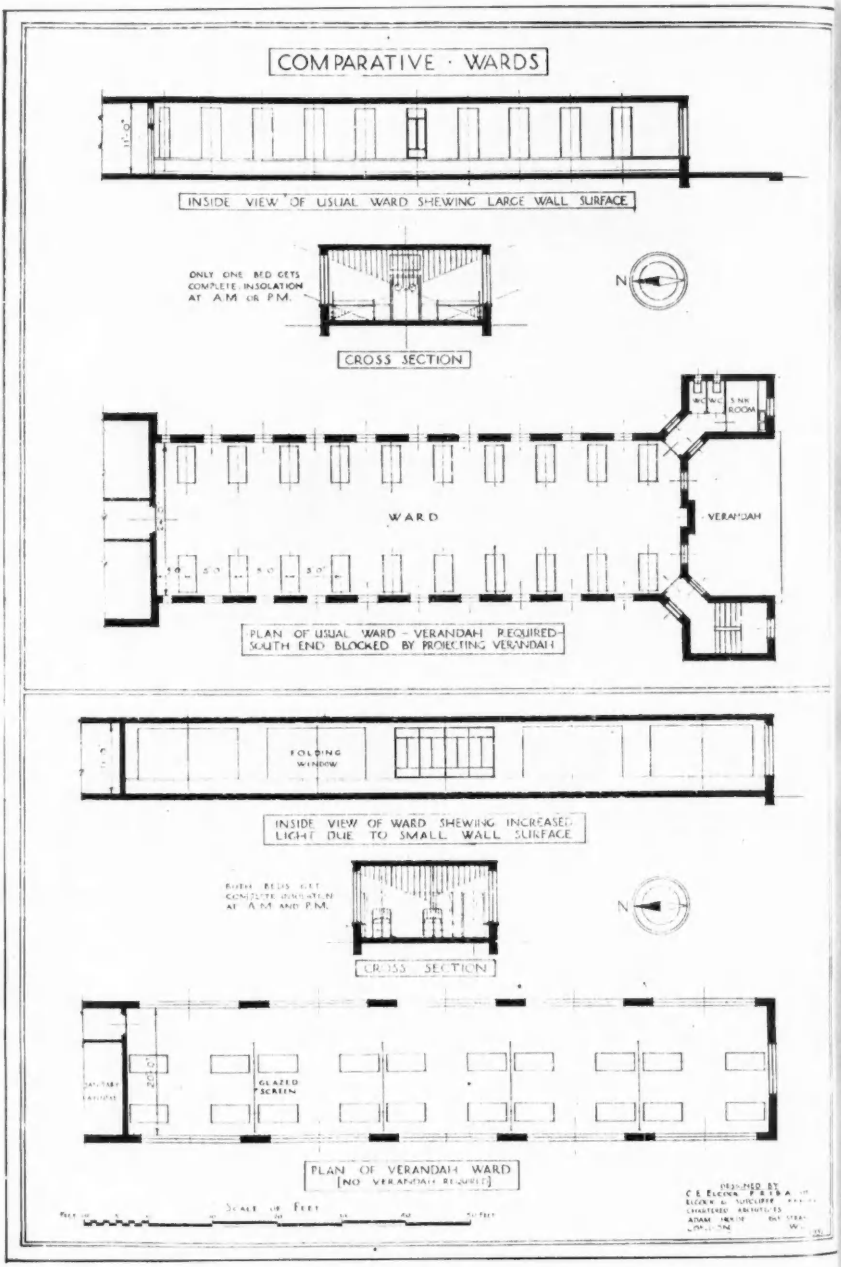
By collecting and collating all these reports a scientific study of the existing hospital services would be at hand with the necessary data to enable a select Committee to draft a final comprehensive report on the present and future Health Services of the agreed Bristol and District Division. Special notice would be taken of the social conditions of each area within the district and the report would particularly include a statement as to the preventive and social

hygiene work at present undertaken in the district. Based on the report certain new hospitals might be necessary, with possible rearrangement of existing hospitals. A further development might consist in enlarging some of the rural hospitals so that they might also act as convalescent hospitals for the Urban areas, as well as catering for the acute sick in their immediate neighbourhood.

As economy in material and cost will be an immediate problem in post-war building, it will be necessary for the architect to be willing to strike out on new lines. There must be no complacent acceptance of old traditions. In architecture complacency and tradition make bad masters. The stones they build with have had time to gather the proverbial moss. But there is a most extraordinary divergence in the cost of both large and small hospitals. For instance, a large voluntary hospital lately erected in London has cost over £2,000 a bed. This is comparable with a somewhat similar hospital lately erected in Lancashire which cost under £700 a bed. If allowance is made for certain special features in the London Hospital, it is still impossible to agree to a figure of over £2,000 a bed. A small Wiltshire Cottage Hospital erected complete at a cost of under £500 a bed has to be compared with a Yorkshire Cottage Hospital of exactly the same size costing £1,000 a bed. This extraordinary variation in cost shows that there is a need for some standardization of requirements as regards accommodation, construction and equipment. The definite essentials of a modern hospital should be agreed on by conference between the Medical and Nursing Administrative Staffs in co-operation with architects skilled in hospital planning. A great deal remains to be done in the development of modern hospital planning, as from 1856 to, say, 1914, hospital planning—with few exceptions—became standardized, crystallized and even fossilized. The large hospitals of the future must be as clean and scientific in design as a surgeon's lancet. They must partake more of the nature of "factories for health" rather than offering an imposing opportunity for architectural display. As far as possible corridors must be eliminated, sanitary services must be collected together, noise must be lessened, and, above all, there must be a form of plan and construction which will allow for the utmost flexibility in rearrangement of rooms and walls so as to keep abreast of new developments in medical and surgical requirements. By the adoption of what I have styled the "health factory" type of plan, with its scientific clarity and flexibility of design, and its elimination of outmoded and unnecessary features, not only is capital outlay saved but large economies can be effected in annual administrative costs. I have actually worked out a plan of a General Hospital for 500 patients on this new system of planning, and have had the costs properly estimated. The economy is at once apparent when the figures show that this General Hospital fully

A·CONTINUOUS·VERANDA·WARD·HOSPITAL·TO·ACCOMMODATE·480·BEDS
ROADWAY
MORTUARY
OPERATING
ISOLATION
ENTRANCE COURT
NURSES AND MAIDS HOME
THE WARD UNITS
BIRDS·EYE·VIEW·FROM·THE·SOUTH·EAST· [DIAGRAMMATIC]

No. 1.


COMPARATIVE · WARDS
INSIDE VIEW OF USUAL WARD SHEWING LARGE WALL SURFACE
ONLY ONE BED GETS COMPLETE INSOLATION AT A.M. OR P.M.
N
CROSS SECTION
WARD
VERANDAH
PLAN OF USUAL WARD - VERANDAH REQUIRED - SOUTH END BLOCKED BY PROJECTING VERANDAH
FOLDING WINDOW
INSIDE VIEW OF WARD SHEWING INCREASED LIGHT DUE TO SMALL WALL SURFACE
EVERY BED GETS COMPLETE INSOLATION AT A.M. AND P.M.
N
CROSS SECTION
GLAZED SCREEN
PLAN OF VERANDAH WARD (NO VERANDAH REQUIRED)
SCALE OF FEET

No. 2.

equipped with all fixed fittings—but without loose furniture and not including a medical school, but inclusive of a Nurses' Home and heating and electric installations could be erected in this country at 1939 prices for under £600 a bed. Allowing for a possible one-third increase in post-war costs, it still shows a remarkable economy in construction.

Here Mr. Elcock illustrated his lecture with lantern slides, four of which, by the courtesy of the Royal Society of Medicine, we are permitted to reproduce, together with extracts from a paper printed in the *Proceedings of the Society* (March, 1942).

No. 1 shows the new type of Veranda-ward which Mr. Elcock first designed in his plans for the extension of the Hertford County Hospital. The old-pattern wards had walls of which 70 per cent. of the surface was filled with bricks while the window openings formed only 30 per cent. He reversed these proportions, turning the wall space into long windows which could slide open and convert the ward into a veranda. The beds grouped between glass screens are placed parallel with the wall instead of at right angles to it.

Nos. 2 and 3 are designs for a "Health Factory." This consists diagrammatically of a long hall 20 feet wide placed with its axis east and west. Large folding windows come between the supporting stanchions on the south façade. A typical floor would be divided into units of thirty beds each, and might be three or six units long and from three to ten floors high, depending upon the number of beds required. In the centre of each unit on the northern side are placed the necessary subsidiary rooms, toilet rooms and utility services. Each unit is separated from the adjacent units by a cross wall, but communicates through the escape staircase lobby. Each utility wing on the north side has its own bed and passenger elevators and staircase, but there is no connecting corridor except on the ground floor. All internal walls can be removed without interference with the structure, which allows the utmost flexibility for future needs. All sanitary and main service pipes are in the northern service wings. The main structure would be of steel with thin external walls lined with non-conducting material and noise proof floors, sanitary apparatus, piping and doors.

No. 4 is an actual project for expanding a hospital into the complete "Health Centre" of a large provincial town of the future. The centre is to consist of the main hospital, a new nurses' home, kitchens, out-patients departments, maternity unit, modern research laboratories, but its chief feature will be preventive and educative therapy in the form of clinics, lecture halls and class rooms, swimming bath, outdoor and indoor gymnasia and a variety of other amenities all leading to the enthusiastic teaching of how to live healthfully both young and old. And this is only a small part of the whole "Health City of the Future" which Mr. Elcock envisages, with its parks, swimming baths, gymnasia, schools, community halls, hobby and craft rooms with its museums and lecture halls in which people can be taught how to eat and drink, how to dress and how to employ their leisure. Thus, instead of health being associated with disease, it will be associated with healthy living.

And yet—after all—we have only touched the negative side of the subject of future health services—the curing of established disease or injury.

The great positive future of our health services is the prevention of disease and the teaching of people how to live happy and healthy-minded lives.

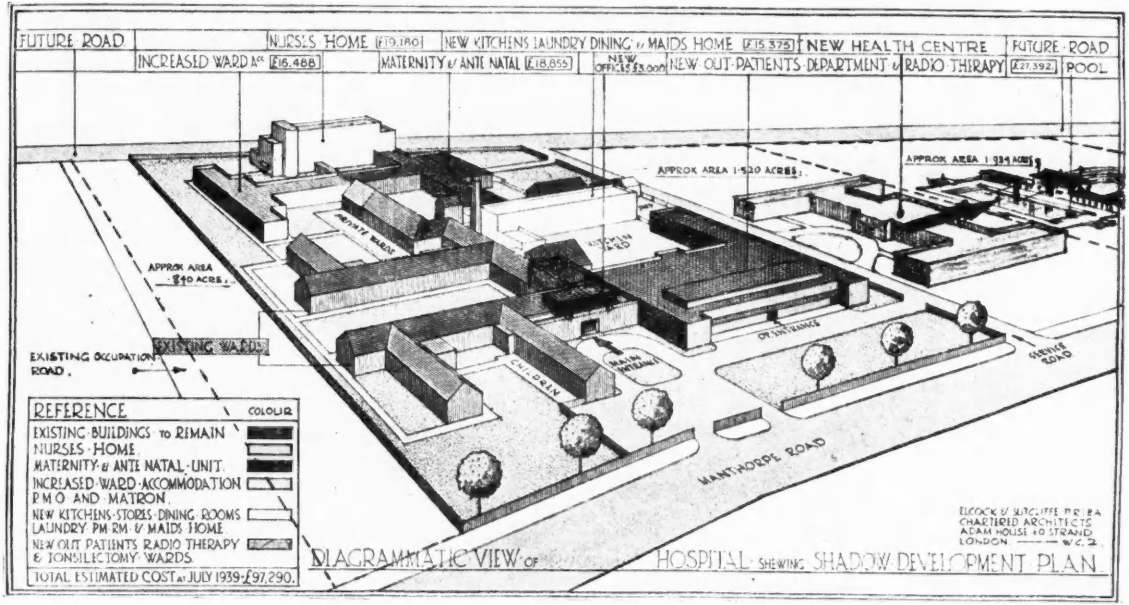
How to work healthily—how to enjoy their leisure healthily—how to keep clean, what to eat and how to cook it—and so eventually —*to keep out of the hospital.* The whole subject of the health of the people has for far too long been limited to caring for the sick, to relieving or curing the diseased or injured.

As an architect who has been responsible for the planning of many types of hospitals and who has studied these buildings in Europe and America by personal visits, I feel that the time has certainly come when a new view of our community health services is demanded. I therefore suggest as a layman—that the next great advance in medical practice will be the prevention of disease and the teaching of the principles of healthy living. We will always have the necessity for the provision of hospitals and their appurtenances for the care of those actually struck down by accident or disease, but the time is fully ripe for a different outlook and for the dissemination of the facts which make for a healthy mind in a healthy body. We must cease to think merely of hospitals as places to educate young doctors, instruct nurses, inoculate guinea-pigs, or as elaborate plumbing depots—they must be part of the educational facilities of a community, where education in healthful living is actually the mainspring of their activities.

I visualize these health centres as more than Community Centres, but they would include these. I can see—diagrammatically—a large campus or place having at one end its Municipal Offices and Council Chambers, and the usual concomitants of these buildings. Along two sides would be the Art Gallery and Museums, the Library, and the Public Hall fitted for concerts and dramatic performances and other public uses. On the other side might be the School of Art and the Technical College. At the other end would be the Community Centre, containing the very important Reception and Enquiry departments, where new people coming to the town could be at once advised as to the places of residence—work possibilities—where to shop; and incidentally, be initiated into the life of the city, town, or village, and feel they had come amongst friends. A large central lounge with various quiet and noisy rooms with suitable refreshment facilities would also be an important feature. There would be rooms for Adult Educational activities, hobby and craft rooms to enable people who have not the necessary space in their smaller houses to make things for themselves, gymnasia for juniors and adults. In addition there would be departments devoted to bodily health. Maternity *and Paternity* and Child Welfare Clinics,

The Continuous - Terrace Ward Hospital.
ADVANTAGES
1. EASE OF SUPERVISION
2. SMALLER STAFF REQUIRED
3. NO MAIN CORRIDOR ABOVE GROUND FLOOR
4. FLEXIBILITY OF PLAN TO SUIT ALTERATIONS
5. GREAT ECONOMY IN CONSTRUCTION
Ward Units for 30 beds

No. 3.


FUTURE ROAD
NURSES HOME £19,180
NEW KITCHENS LAUNDRY DINING & MAIDS HOME £15,375
NEW HEALTH CENTRE
FUTURE ROAD
INCREASED WARD Acc £16,488
MATERNITY & ANTE NATAL £18,855
NEW OFFICES £3,000
NEW OUT-PATIENTS DEPARTMENT & RADIO THIRAPY £27,392
POOL
APPROX AREA 1·520 ACRES
APPROX AREA 1·334 ACRES
APPROX AREA 840 ACRES
EXISTING OCCUPATION ROAD.
EXISTING WARDS
PRIVATE WARDS
KITCHEN
CHILDREN
MAIN ENTRANCE
OUT PATIENTS
SERVICE ROAD
MANTHORPE ROAD
REFERENCE
COLOUR
EXISTING BUILDINGS TO REMAIN
NURSES HOME
MATERNITY & ANTE NATAL UNIT.
INCREASED WARD ACCOMMODATION P.M.O. AND MATRON.
NEW KITCHENS STORES DINING ROOMS LAUNDRY P.M. RM & MAIDS HOME
NEW OUT PATIENTS RADIO THERAPY & TONSILECTOMY WARDS.
TOTAL ESTIMATED COST AT JULY 1939 £97,290.
BLOCK & SUTCLIFFE F.R.I.B.A. CHARTERED ARCHITECTS ADAM HOUSE 10 STRAND LONDON W.C.2.
DIAGRAMMATIC VIEW OF HOSPITAL SHEWING SHADOW DEVELOPMENT PLAN.

No. 4.

and Examination and Consulting Rooms for regular health surveys and advice. All these would be linked closely with the public health services, the clinics and hospitals, and the Field Service Health Unit for the Divisional District. This Field Service Unit would be centrally situated—possibly at the Medical Centre—with its own research laboratories and a staff of physicians, nurses and social workers, ready to go anywhere in the district to take charge in case of industrial disaster, or assist or investigate the outbreak of disease in the district.

I would suggest that the development of these health centres is something bigger than the provision of mere "health factories"—health houses or hospitals. To me the wire fence round the cliff top is more interesting than the more spectacular ambulance at the bottom.

Personally, I am getting somewhat tired of the insistence on curing disease. I want there to be very little disease to cure. I visualize the abounding health and happiness of the people as becoming the greatest future glory of civic life.

We have accustomed ourselves to point with pride to our huge medical centres and hospitals, quite forgetting that the greater these are, the greater is the shame that such things should be required. I can see a city with its parks, swimming baths, gymnasia, schools, community halls, hobby and craft rooms, with its museums and lecture halls, in which people can be taught how to eat and drink, how to dress, how to employ their leisure: in short, how to live rightly; and all these linked up closely and intimately with preventive health clinics of all sorts—infantile, adolescent and adult, and round the corner, somewhat ashamed of its existence, the hospital, to take all those unfortunates whom accident or disease has laid low. Instead of health becoming associated with disease, it will thus become associated with healthy living.

Going through the streets of our cities and small towns we see many people standing about at corners, lounging in bars, hump-shouldered and shabby, and in an ignorant effort to pass time away spending their money on "that which is not bread." Go through the West End of our cities into our well-established clubs and our precariously established night-clubs and see the lounging men and women, who are presumably better educated, doing exactly the same thing. Neither their physique nor their conversation shows culture of body or of mind. We want to restore to humanity some of its innate dignity and an educated sense of its worth.

There are obviously very important details to be discussed—the obsolete arrangements of honorary medical staffs—the admission of private practitioners to attend to their own patients in hospitals—the position of specialists—the training of medical students—the salaries, training and housing of the registered qualified nursing staffs—the status and duties of hospital administrators—the

selection of Members of Voluntary Hospital Boards—the representation on State and County Hospital Boards of Divisional Council Representatives. In addition there will be the details of the types of Hospitals — Convalescent Homes — Specialist Hospitals — Medical Centres and Sanatoria, and Community Health Centres and Clinics. These matters must be based on the Surveys and Reports from the District Divisional Council, but sufficient has been stated to indicate the magnitude of the task which lies before any body of men and women who wish to undertake a serious study of future health services for their district. Above all—it is the Health of the People you are to consider and not merely disease-curing.

The matter is urgent. Men are fighting now in the air, on the sea, and on land so that they may come back to their country and find something better in the future. They will be in no mood to be satisfied with "Homes for Heroes" which do not materialize, nor petty party rearrangements of social and economic conditions. They will rightly demand that this unparalleled sacrifice of life and treasure should eventuate in well-drawn and practical propositions on which they can be at once employed. Only by immediate initiation of surveys and the preparation of workable schemes can we check any natural outburst of disappointment with all its obvious and awkward possibilities.

In this connection the words of Sir William Beveridge in an address delivered in London last week, are worthy of study. He said: "A major contribution to victory would be to give all on war service—whether in the Forces or in civilian work—confidence that the Government had effective plans for maintaining employment after the war, and would use all the powers of the State, so far as necessary, for that purpose.

"It is not possible to trust to the methods of the 'last peace'—of private enterprise without national planning—to bring about the necessary readjustment of our productive effort in the difficult transition period after the war. National planning is essential however the plan is executed. But it is vital to preserve initiative, and enterprise. The practical problem is that of discovering how to combine the proved benefits of private enterprise at private risk in the past with the necessity of national planning in the aftermath of war. The solution can be found only by thorough unbiased investigation and discussion now."

Therefore do not forget the urgency of the work which lies before you. The Survey and collation of facts, the preparation of a sound working scheme of this magnitude is a matter of really serious and detailed work. A time limit should be set and the report should be issued by a certain date, or else your "Great Plan" may remain vague, visionary and nebulous. Get the whole people of your Region or District enthused with "The Big Idea," ask them to sit at your local enquiries and let them recapture their youth in helping

forward the health and happiness of their own generation and of the generations to come.

QUESTIONS AND ANSWERS.

Q. MR. J. NELSON MEREDITH, F.R.I.B.A. : Could Mr. Elcock give his views on underground operating theatres ?

A. MR. ELCOCK : I do not think there is any difficulty at all about where you place an operating theatre. If you have an underground operating theatre, providing you are willing to face the ventilation expense, and such an operating theatre would involve a great deal of expense, there is no reason why it should not be perfectly satisfactory.

More and more surgeons are taking up the attitude that when they are operating they prefer artificial light, so this aspect of the matter should provide no difficulty.

Q. MR. A. J. WRIGHT, M.B., F.R.C.S. : Where equal opportunities exist, does Mr. Elcock favour vertical or horizontal development of hospitals ?

A. MR. ELCOCK : If you have a very large city hospital situated on a site—we suppose it might be in the centre of Bristol, which is, as far as I know, on rock foundation—you could build your hospital fifty storeys high at very great economy. There is no doubt at all that a vertical type building for a large hospital has great economic value over the long horizontal type, which also loses in its annual revenue on account of upkeep expenses. With the vertical type you have one foundation, one roof, one supply plan for heating and electricity, and so on. In all cases we are advising a vertical hospital, unless there are causes in connection with the treatment of the disease which make a vertical type unwise.

Q. DR. P. PHILLIPS : With a view to possible aerial bombardment, should hospitals be situated in centres of cities in future ?

A. MR. ELCOCK : If we are going to consider the question of building after this war is over to accommodate ourselves to the possibility of such insanity happening again, we deserve to have all we get, and it does not matter in the slightest degree how high we build or how prominent we make our buildings if they are going to be knocked down—and we shall deserve to have them knocked down with the people in them. I don't think there is any object in building if we, in this country, are satisfied to go on living after the war as we are living at present.

Q. MR. F. M. BURRIS, J.P. : The " W " plan was stated to allow the light to come in, whereas the plans of a " star " building of an American hospital, Mr. Elcock said, did not get the whole of the light. As a novice it seems that the set of the two buildings is very similar, and it would be very interesting to know how the light does get into the one and does not get into the other.

A. MR. ELCOCK : The only objection to the " star " plan is that the inner angles of the star come so close together that they prevent the sunlight getting to the whole of the building, whereas if the star is

kept apart, as in the " W " plan, you get the light coming down in the centre of the " W."

Q. MR. KENNETH H. PRIDIE, M.B., F.R.C.S. : How has it come about that the excellence of the hospital is inversely proportionate to the value of the patient ? For instance, if you are a lunatic you get teak doors and solid gun-metal handles and knobs, and if you are a wage-earner you get deal doors and brass knobs.

A. MR. ELCOCK : In regard to the distinction between the poor patient and the mental patient—the mental patient has to have first-class fittings, and you would be surprised to know how many mental patients will sit for a whole day worrying with their fingers at a little bit of screw which happens to have a slot in it as compared with one which hasn't, and how many will want to hang themselves on any conveniently placed hooks. The mental hospital has to be fitted up with extra strong things and extra good wood, but it is certainly a mistake for any hospital not to use first-class materials and spend money in capital outlay. Always go in for good stuff in the beginning and you will find you will save money in administrative costs and upkeep.

Q. THE REV. H. J. MORGAN : Could the speaker define a little further the relationship between the hospital in the urban area and the hospital in the rural area, and the functions they play, because a hospital in a rural area still has to serve a proportion of the people in that area who could not get into the urban hospital ? You did mention acute cases being treated in their own rural hospitals, but there are other cases besides to be considered.

A. MR. ELCOCK : Hospitals in rural areas are to continue to function as hospitals for the district, plus the assistance and advice of a Central District Council. They will increase their functions because they will want to meet the desires of the medical students who will want to see how to attack country disease and illness. But in addition they will keep in touch with the Central Council by having numbers of patients sent to the healthy surroundings of the country for convalescence and special treatment, whereby they may empty the beds in the large urban hospitals for the more acute cases. The rural hospitals should go on and even increase their functions, and particularly assist in the treatment of chronic diseases.

DISCUSSION.

ALDERMAN J. J. MILTON, J.P. (Chairman, Bristol Public Health Committee) : I have been intrigued with the lecture this afternoon on the future of hospital development in Bristol, and I may say that so far as the Health Clinic side of the lecture is concerned, one could fully agree with what Mr. Elcock has said. But I am rather concerned with his idea of the main hospitals being centred round the teaching centre. I am one of those individuals who think the welfare of the patient and consideration of the patient is the thing that comes first, and that we have to build up our structure around the welfare and good of the patient.

In the large towns and cities of this country, large townships are

springing up on the outskirts of towns which previously existed, and in my opinion it is necessary to provide for the needs of the people in the growing townships outside these cities.

You have a very good example here in Bristol. You have many districts growing very swiftly, and which will grow much more swiftly still after the war. In the hospital that serves one area they have had to increase on account of the need and the wants of the district; they have had to open up new departments; they have had to put up increased accommodation for their nurses—largely on account of the needs and wants in the district.

I visualize that this will go on. You will have to meet the wants of the people in these areas and you will have to make provision for it, and that provision you make will not have to be any second-rate provision. It will have to be of equal standard to that of any provision in the important centres of the city, and therefore, there is one thing I should like to hear more about from Mr. Elcock: whether he has fully made up his mind that what he suggests is going to be the best thing for the patient and for the general welfare of the people.

I fully agree with him as to the development of health services, and preventive medicine has to play an important part, but so far as allocation of the main hospitals are concerned of bringing them all within a subscribed area, then I disagree.

MR. H. EVANS: In deference to my Chairman, I should like to agree with what he has said, but surely if you are going to have good doctors you have got to have good medical students, and therefore a good medical school, and every opportunity should be given to that medical school to get all the information it can from the hospital, which should be close to the University and the school itself.

MR. G. D. GORDON HAKE, R.W.A., F.R.I.B.A.: I should like to thank Mr. Elcock on behalf of the architectural students for his courtesy in directing certain of his remarks particularly to them. I am sure they very much appreciated it.

MR. ELCOCK: I think, Mr. Chairman, a locally uneducated person like myself would be extremely inadvised to make any attempt at a dogmatic reply to the very well-informed Alderman Milton, who actually knows the district from A to Z, has lived here all his life, and plays such an important part, as I know very well, in the health work of the district. It would be quite foolish for me to state anything dogmatic about anything which requires specific knowledge and consideration of conditions in the district.

I agree with him entirely that the patient comes first, the patient comes second, the patient comes third. The welfare of the patient is the whole object, but the welfare of the patient is only secured—the real welfare—by the attention of first-class trained doctors and nursing staff.

The years of studentship pass very quickly. The time is very limited in which study can be given to these things, and it therefore seems to me that a great deal of thought should be given to the possibility of erecting the Medical Centre so that it might be very advantageously situated with regard to its relationship to the medical school.

Time should not be wasted in travelling from hospital to hospital, and it would appear to me that you have a remarkable opportunity in

the centre of Bristol adjacent to the University Medical School. You have a remarkable opportunity of erecting, therefore, a building which could be a very fine school of medical teaching and at the same time ensure the real welfare of the patient.

THE REV. MORGAN: Mr. Chairman, forgive me for keeping you a moment, but would it be possible for this address to be printed? There was so much of real value in it, particularly in the second part, that I am sure some of us would like to read it at our leisure.

PROFESSOR J. A. NIXON: We are in a position to publish the lecture with its illustrations, and if we may have the opportunity of doing so in our local medical journal, reprints would be available for all of us, if Mr. Elcock is willing. We could illustrate it amply.

May I say how delightful the lecture has been to the doctors here? It is quite true that Mr. Elcock strayed a little bit from what you might think was the strict architect's approach to this subject, but he has justification. I think he has taken as his example Sir Christopher Wren, who, long before he planned the rebuilding of London, was working for the members of the Royal Society in Oxford, and was actually the first man in the world to make an intra-venous injection.

I think this mixture of medical study with architecture is quite justified in hospital planning, and I very much appreciate all that Mr. Elcock has been telling us.

THE CHAIRMAN (Alderman A. W. S. Burgess, J.P.) stated that Mr. Elcock had no objection to the report being published.

MR. EUSTACE H. BUTTON, R.W.A., F.R.I.B.A., in proposing a vote of thanks to the lecturer, spoke on the need for education in order to ensure active co-operation from the whole nation in post-war reconstruction, and of the importance of men like Mr. Elcock who can enthuse others with plans for the future.

The vote of thanks was seconded by Mr. A. J. Wright, who thanked Mr. Elcock for the freshness of his outlook.

The Chairman concluded the lecture by laying emphasis on the fact that in planning for the future no one should be too dogmatic in his ideas. One should, rather, be willing to consider the ideas of others, and he thought a little compromise on these ideas might result in a very useful post-war world. He said that he himself had a perfectly open mind on the proposed central hospital, and he suggested that that should be the general attitude at the present juncture.

SOCIAL AND ECONOMIC CONDITIONS AND THE INCIDENCE OF RHEUMATIC HEART DISEASE.*

BY

G. H. DANIEL, D.Phil.

[Reprinted with some omissions from the *Journal of the Royal Statistical Society*, Vol. CV., Part III., 1942, by kind permission of the Society.]

INTRODUCTION.

DIFFERENCES in health between sections of a population may be reasonably considered as due to differences between them in their hereditary make-up, geographical distribution, or economic and social conditions of life. The latter are likely to affect health in several ways, since they include the nature and amount of nutrition which members of the population obtain, the adequacy of their housing accommodation and clothing, the amount of exposure and toil to which they are subjected and the degree of medical attention which they receive.

The difficulties in the way of isolating and measuring the factors which determine the incidence of disease are considerable. The phenomena in question are not under the control of the investigator, and the only information which can be secured for analysis is that relating to the existing differences between sections of the population in their constitution, distribution, conditions of life and the incidence of the disease. There is in the first place, therefore, the difficulty of ascertaining which of the many other points of difference are casually associated with the differences in incidence and are specific to the disease. It would be of little use to relate incidence to such an omnibus condition as the degree of urbanization, while, on the other hand, a relation established between the disease and a certain nutritional deficiency would be of practical value. In the second place, a causal relation existing between the incidence of the disease and any one factor—for example, nutrition—is likely to be obscured by the effects of other agencies, such as clothing or housing. It is necessary, therefore, to go beyond the *prima facie* relation between incidence and a particular factor, and to study, as far as possible, the relationship between them when other determining factors are held constant.

* The present study was suggested by Professor Bruce Perry of the Department of Medicine, Bristol University, who also found which Bristol families contained children suffering from rheumatic heart disease. The data upon which the study is based were collected by the Bristol Social Survey under the guidance of Mr. Herbert Tout. The writer is responsible for analysing the data and preparing the results for publication. Grateful acknowledgment is due to the Medical Research Council and the Colston Research Society for financial assistance, and to the University of Bristol for the facilities afforded for the investigation. Professor M. Greenwood and Dr. J. O. Irwin read the paper in draft and made valuable suggestions.

It appears from the literature on the aetiology of rheumatic disease that, so far, these difficulties have not been very successfully overcome, and although there is a substantial amount of published work on the subject, the conclusions which can be safely drawn are limited. Several writers have pointed to the existence of large differences in the incidence of rheumatic disease between children in private and children in State schools, between patients attended in private practice and hospital patients, and between children in poor-law schools and those in state schools.* The two populations in the last of these comparisons were drawn from a similar social and economic class, and may have had a similar hereditary background. But in the other two comparisons the discrepancy in incidence could clearly have been due to differences in hereditary constitution, geographical distribution, or social and economic conditions. The comparisons merely show that these factors between them gave rise to marked differences in incidence and that, on the whole, the poorer classes were associated with the higher incidence.

Other writers have attempted to relate the incidence of rheumatic disease to particular agencies, such as poverty (see, for example, Faulkner and White, 1924, Maddox, 1937, and Miller, 1928), nutrition (Miller and Wilson, 1939, and Vining, 1928), overcrowding (Perry and Roberts, 1937), damp (Coates and Thomas, 1925, Coombs, 1927, Miller, 1926, Newsholme, 1895, Thomson, 1926, and Young, 1925), the distribution of vermin (Clarke, 1928), industrialization (Young, 1921), urbanization (Atwater, 1927, and McCulloch, 1928), and heredity (Hill, 1928, Hill and Allan, 1929, and Sutton, 1928). The Medical Research Council Report of 1927 dealt with the effects of maternal care, subjection to exposure, parents' character, fathers' occupation, income, housing, sanitation, and elevation.

But many of these factors have been inadequately considered in relation to their likely effect on the disease, and others have been so broadly defined as to be useless for practical purposes. There is no obvious reason why parents' character should affect the susceptibility of children to disease, except in so far as it has some influence on the provision of the necessities of life in their homes, and thus, indirectly, affects the health of the children. Nor is it of value to find a relation between incidence and the degree of industrialization. Such a relation expresses only the sum effects of a great many specific factors associated together under industrial conditions, some affecting the disease in one way and some in other ways.

In no case does an effort appear to have been made to probe below the surface relations between the incidence of rheumatic disease and the conditions believed to affect it. The net relations—that is, the effects when other factors are constant—have not been examined. Thus Maddox (1937) plotted the location of known cases of rheumatic disease on maps showing climate, relief, distribution of underground water, and poverty, in an attempt to relate the disease to each of these conditions. But, even if the distribution of cases had corresponded closely with that, say, of water, this could have been because the total population, rheumatic and non-rheumatic, was also so distributed.

* See Faulkner and White (1924), Miller (1928), and Medical Research Council (1927). A review of the whole literature is given by Paul (1930).

because the people living near the water-courses were the poor, malnourished and susceptible classes, or because infective agencies were concentrated there.

Moreover, the methods employed in establishing relationships have frequently been not only limited but unreliable. Thus Miller concluded that dampness was a determining factor merely from an estimate of the number living in damp houses among 196 persons suffering from the disease. The Medical Research Council Report of 1927 sought to evaluate the effects of social and economic conditions by comparing the living conditions of 721 families containing children under hospital treatment for rheumatism with those of 200 families containing children attending hospital on account of non-rheumatic disease. These 200 families, however, included among their other members 43 cases of rheumatism. And, like the rheumatic families, they were families of the hospital class, and belonged presumably to the poorer sections of the community. It is quite possible that their diseases as well as that of the rheumatic families were related to adverse social and economic circumstances. In that case comparison of their conditions as made in the Report of the Medical Research Council could not be expected to reveal the importance of those conditions. The rheumatic families should be compared, not with families suffering from other diseases, but with the total population.

There can be little doubt that an important reason for the slow progress made in the study of the aetiology of rheumatic disease has been the cost of obtaining quantitative data about the condition of a reasonably large number of rheumatic and non-rheumatic families. To a limited extent such information was collected by the University of Bristol Social Survey in 1937. Although it was not the primary object of this Survey, advantage was taken of it to enquire into the relation between the social and economic conditions of life of the Bristol population and the incidence of the disease.

The Bristol Data.

In the summer of 1937 the University of Bristol, in conjunction with the Colston Research Society, investigated the circumstances of a random sample of the Bristol working-class population.* The families considered were those of manual workers, and black-coated workers with incomes not exceeding £5 per week, and information was secured from one family in twenty-two. It was clear that some of the aspects of social and economic conditions about which information was obtained were likely to affect susceptibility to disease. The opportunity was, accordingly, taken of collecting the same information about Bristol families with children suffering from rheumatic disease.

Rheumatic heart disease was chosen as the criterion of rheumatic infection, in order to reduce to the minimum doubts as to correct diagnosis. All cases of working-class children of school age—that is, between five and fourteen years of age—who had shown signs of active rheumatic infection during the eighteen months preceding or covering the period of the Social Survey were investigated for the study. They included the cases discovered by the School Medical Officers during their

* See Tout (1938).

routine examination and all cases receiving treatment at the two large voluntary hospitals, the children's hospital and the municipal hospitals. The only children not included were those receiving attention from private practitioners, but these were almost certainly above the income limits of the section of the population covered by the enquiry. A small number of the families containing rheumatic children were later found to be middle-class, and a few had moved from Bristol or refused information. The total number of families containing children five to fourteen years of age suffering from rheumatic heart disease and from whom information was obtained was 341.

From the sample of the entire working-class population, all families with children five to fourteen years of age were abstracted for comparison with the rheumatic population. The total number of such families was 1,424.

The information collected for both the rheumatic families and the sample of the total population, and which appeared likely to be related to the incidence of rheumatic disease, dealt with income, housing accommodation, membership of a doctor's club, and the receipt of meals or milk at school.

The size of the family income may be expected to affect the children's susceptibility to disease in three ways: the amount of money spent on food may limit the adequacy of their nutrition; the amount spent on clothes and fuel may be related to the degree of exposure; and the outlay on rent and rates may largely determine the nature of their housing accommodation. The Social Survey secured information about the total earnings of each member of the family for the week preceding the date of investigation, and note was made of such items of income as gifts, free clothing, unemployment benefit, and pensions. The outgo on rent and rates, travelling expenses, insurance, trade union subscriptions, and other regular payments was also ascertained. Other expenditures were not investigated, but subtracting the outgo on fixed items from the total family income leaves a residue which was mainly laid out on food, clothes and fuel.* Lacking more detailed information, the figures for this residue may be related to the incidence of the disease.

It is not, of course, the total family income which is likely to affect susceptibility to disease, as much as the income of the family relative to its needs. It is necessary to adjust the total income according to the size of the family and the age and sex of its members. The minimum needs of each family were evaluated by the Social Survey† according to the age and sex of each member of the family, the standards adopted following, with small modifications, those laid down by George (1937). The net income for each family was expressed as a percentage of its minimum needs, and it is this percentage which is related in the present paper to the incidence of rheumatic heart disease.

* According to the Ministry of Labour's enquiry in 1937 into the expenditure of working-class households, the income left after paying for rent, rates, travelling, insurance and subscriptions was spent as follows:—

Food	51 per cent.
Clothes	14 ,,
Fuel and Light	10 ,,
Other items	25 ,,

See the *Ministry of Labour Gazette*, December, 1940.

† See Tout (1938).

Expenditure on rent and rates is known, but its effect on children's susceptibility to disease is unlikely to be close, since rent and rates depend largely on conditions such as location and relations between tenant and landlord which may be little connected with the adequacy of the accommodation from the health point of view. Moreover, because many houses are owner-occupied, the amount paid in rent and rates is not available for all families. The Social Survey found for each family the number of living-rooms and bedrooms occupied by it, and whether or not it possessed a kitchen and bathroom. The total number of these rooms used by each family, divided by the number of persons using them, was taken therefore as a more convenient as well as a more accurate index of housing accommodation.

It was also recorded on each of the Survey cards whether any of the living-rooms or bedrooms were situated in a basement, whether the families were members of a doctor's club, and whether the children received meals or milk at school. It was considered that each of these attributes might be related to susceptibility; the use of a basement room because of dampness or lack of light and ventilation, membership of a doctor's club because of the greater opportunities afforded by it for medical attention, and receipt of school meals or milk because of its supplementation of family income. Each of the three attributes enables the population to be divided into two classes, according to possession or non-possession of it, and all three attributes together enable the families to be divided, as shown in Table III, into eight classes.

The incidence of the disease was measured and related to these social and economic conditions by taking each class into which the population could be divided on the basis of net income, housing accommodation, etc., and finding the number of families falling into it among the rheumatic families on the one hand and among the sample of the total population on the other.

The number of rheumatic families in each class was divided by the number of families from the sample of the total working-class population in the same class and, to facilitate comparison of incidence between the classes, the result was expressed as a percentage of the proportion between all 341 rheumatic families and 1,424 families in the total population sample. This gave for each class the incidence of the disease as a percentage of the average incidence among the entire population studied.

The Bristol data thus yields the following information:—

(*a*) Incidence of rheumatic heart disease in each group of working-class families as a percentage of the average incidence for all Bristol working-class families. This will be taken as the dependent variable (Y) and for the sake of brevity it will be referred to as the "incidence."

(*b*) Income available for expenditure on food, clothes and fuel as a percentage of minimum needs. This independent variable (X_1) will be referred to simply as the "net income."

(*c*) Number of rooms per person (X_2).

(*d*) Use of a basement room, receipt of meals or milk at school, and membership of a doctor's club.

Total Relations between Economic and Social Conditions and the Incidence of Rheumatic Heart Disease.

The relation between rheumatic heart disease and conditions of life may be studied by examining, first of all, the association between incidence and each one in turn of the independent variables which have just been described.

In Table I the families are divided among eight net income groups. The second column shows the number of rheumatic families in each group, and the third column the total number of working-class families. The figures of incidence set out in the following column were calculated, as already explained, by dividing the figures in the second column by those in the third and expressing the results as percentages of the average proportion for the whole population.

The figures show a marked relation between net income and incidence; families with incomes below their minimum needs included

TABLE I

Incidence of Rheumatic Heart Disease in Relation to Net Income.

Net Income (as a % of minimum needs). (1)	Families with Rheumatic Heart Disease. (2)	Families in Sample of Total Working-Class Population. (3)	Incidence of Disease (as a % of average incidence). (4)	Expected Incidence.* (5)
Under 100	77	232	139	142
100–120	54	152	148	122
120–140	51	191	112	108
140–160	33	192	72	97
160–180	37	192	81	88
180–200	31	149	87	81
200–220	17	93	76	75
220 and over	41	223	77	70
Total	341	1,424	—	—

* Estimated from $Y = 4{,}291\ X_1^{-0.757}$.

approximately 40 per cent. more cases of rheumatic heart disease than did the average working-class families, and approximately twice as many as the working-class families in the highest net income group. These differences in incidence could be due, at least partly, to the smallness of the samples, the proportion of rheumatic heart families in each group being known only from the limited experience of eighteen months, and the distribution of all the working-class families being based on a random sample of one family in twenty-two. The author calculates that there is a probability of less than one in a hundred that the differences can be explained on this ground.

The relation between incidence and the number of rooms per person may be examined in the same way. Table II presents a classification of the data with respect to rooms per person like that given in Table I with respect to net income. The differences in incidence shown in the fourth column are highly significant. These differences show a clearly defined inverse relation between incidence and rooms per person.

Families with less than 0.6 of a room per person are shown by this table to have had almost four times as many cases as those with 1.8 rooms or more.

TABLE II.

Incidence of Rheumatic Heart Disease in Relation to the Number of Rooms per Person.

Rooms per Person. (1)	Families with Rheumatic Heart Disease. (2)	Families in Sample of Total Working-Class Population. (3)	Incidence of Disease (as a % of average incidence). (4)	Expected Incidence.* (5)
Under 0.6	52	130	167	187
0.6–0.8	69	193	149	136
0.8–1.0	53	194	114	107
1.0–1.2	73	335	91	89
1.2–1.4	59	303	81	76
1.4–1.6	10	71	59	66
1.6–1.8	19	138	58	59
1.8 and over	6	60	42	53
Total	341	1,424	—	—

* Estimated from $Y = 95.1 \cdot X_2^{-1.037}$.

Table III displays the eight classes into which the population may be divided according to receipt or non-receipt of meals or milk at school,

TABLE III.

Incidence of Rheumatic Heart Disease in Relation to Membership of a Doctor's Club, Receipt of School Meals or Milk, and the Use of Basement Rooms.

Classification of Families.	Members of a Doctor's Club.				Not Members of a Doctor's Club.			
	Receiving School Meals or Milk.		Not Receiving School Meals or Milk.		Receiving School Meals or Milk.		Not Receiving School Meals or Milk.	
	No Basement Rooms. (1)	Basement Rooms. (2)	No Basement Rooms. (3)	Basement Rooms. (4)	No Basement Rooms. (5)	Basement Rooms. (6)	No Basement Rooms. (7)	Basement Rooms. (8)
Families with Rheumatic Heart Disease	4	—	—	—	224	23	84	6
Families in Sample of Total Population	51	2	5	—	980	60	307	19
Incidence	33 ± 21	—*	—*	—*	95 ± 5	160 ± 51	114 ± 16	132 ± 83

* Insufficient data.

membership or non-membership of a doctor's club, and use or non-use of a basement for living or sleeping purposes. The advantage of this manifold classification is that it shows the relation between incidence and each attribute independently of the other attributes. Unfortunately, the data are too scanty to enable full use to be made of the table, there

being hardly any observations in the second, third and fourth columns. In some of the remaining columns the numbers of families are so small that comparison must necessarily be tentative and no certain conclusions can be drawn.

Because it is necessary to consider the differences in incidence between each column, the figures of incidence have had attached to them their standard errors. These errors arise from the fact that both the number of families in the total working population and the number of rheumatic heart families in each column are known only from two limited samples drawn at random.

Comparison of columns (1) and (5) suggests that membership of a doctor's club was associated with a low incidence. Taking columns (5) and (7) for comparison on the one hand, and columns (6) and (8) on the other, it does not appear that receipt or non-receipt of school meals or milk was associated with differences in incidence. Examining column (5) against column (6), and also (7) against (8), families living or sleeping in basements had a higher incidence than those which did not, but the differences are not statistically significant.

The Medical Research Council study of 1927, as already mentioned, compared hospital-class families containing children suffering from rheumatic disease with families of the same class suffering from other diseases. The two groups of families were divided into three classes according to their average total income. No direct relation between the disease and income was discovered, and incidence was in fact found to be lowest among the families with less than 35s. per week and highest among those in the middle income group with 35s. to 59s., although the differences were in each case not significant. Criticism of the choice of two hospital-class groups of families for comparison has already been made, and it may be further objected that the comparison was made with respect to total income, and did not take into account differences in the needs of the families concerned. The conclusion reached in the Medical Research Council Report that there is no direct relation between the occurrence of rheumatic heart disease and poverty, and even the finding that incidence is highest in the middle income ranges of the working-class population, has been widely accepted in subsequent literature. The Bristol data show, however, that after adjustment has been made for needs there is a simple inverse relation between incidence and the income left after paying for rent, rates, travelling and other fixed expenses.

The Medical Research Council Report also dealt with the number of rooms used by the families examined and with the use of basement rooms. No significant relation was found between either of these and the disease. But the present data suggest that there is a close and important relation between incidence and the number of rooms per person, and there may also be a relation between it and the employment of basement accommodation.

The present findings agree with those of Perry and Roberts (1937). These writers related the number of cases of rheumatic heart disease per 100,000 population with the density of persons per room in twenty-three Bristol City Wards during the three years 1927–30. They found a simple and significant relation and obtained a coefficient of correlation of 0.84.

Partial Relations between Social and Economic Conditions and the Incidence of Rheumatic Heart Disease.

The question arises whether the relations found between incidence and each in turn of the three independent variables exist when the remaining two independent variables are held constant.

In Table IV are shown twenty-seven figures of incidence and the corresponding values of net income and rooms per person. To prepare it, the rheumatic heart families and the families in the total working-class population were divided among the 120 classes obtained by taking

TABLE IV.

Incidence of Rheumatic Heart Disease in Relation to Net Income and Number of Rooms per Person.

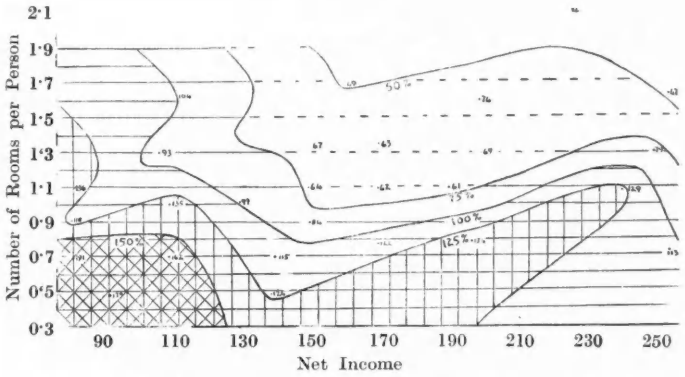
Net Income (1)	Number of Rooms per Person (2)	Actual Number of Rheumatic Heart Families (3)	Number of Families in Total Population Sample (4)	Actual Incidence (as % of average incidence) (5)	Expected Incidence * (6)	Expected Number of Rheumatic Heart Families * (7)
93	0.47	33	77	179	202	37
140	0.48	11	37	124	168	15
82	0.70	22	48	191	159	18
110	0.70	12	31	162	141	11
82	0.90	11	39	118	132	12
140	0.70	14	51	115	127	16
83	1.10	15	46	136	113	13
110	0.99	22	68	135	109	18
170	0.78	16	55	122	109	14
196	0.77	16	50	134	103	12
150	0.90	6	30	84	103	7
130	1.05	23	97	99	97	23
254	0.74	10	37	113	96	8
107	1.30	19	85	93	90	18
150	1.10	6	39	64	89	8
170	1.10	7	47	62	84	9
190	1.10	7	48	61	81	9
150	1.33	9	56	67	77	10
111	1.67	10	40	104	74	7
239	1.10	16	52	129	73	9
170	1.35	10	66	63	72	11
200	1.30	11	67	69	70	11
249	1.30	10	53	79	64	8
162	1.77	4	34	49	62	5
199	1.62	9	51	74	59	7
255	1.65	7	62	47	53	8
224	2.11	5	58	36	47	6

* Estimated from $Y = 757.3\ X_1^{-0.411}.\ X_2^{-0.742}$.

ten classes of net income and twelve of rooms per person. Classes containing not more than thirty families from the sample of the total population were combined with adjacent classes until they had the requisite number of families. For groups made up in this way, the values of net income and rooms per person were found by taking the average of the class-marks of the constituent sub-groups, each class-mark being weighted by the number of families belonging to the sample

of the total population. The incidence in each of the twenty-seven classes was measured, as already described, by dividing the number of rheumatic families in each class by the total number of families in it, and expressing the result as a percentage of the proportion between all the 341 rheumatic families and the 1,424 families in the sample of the working-class population.

The nature of the relation between incidence and both net income and number of rooms per person is shown graphically below. The twenty-seven points marked in the figure represent the values in the table, and each point has been located with reference to the values for net income and rooms per person. Contour lines have been drawn in



Relation between the Incidence of Rheumatic Heart Disease and Net Income and Number of Rooms per Person

relation to the values of incidence for each point. These lines show that the incidence of the disease was highest when net income was low and when, at the same time, there were few rooms per person. At any given income level, the incidence tended to vary inversely with the number of rooms per person ; conversely, with a given number of rooms per person, the incidence tended to increase as net income diminished.

After calculating the relations between these variables, the author finds that, when there was no difference in the number of rooms per person, a given percentage difference in net income was accompanied by a difference of $0{\cdot}414 \pm 0{\cdot}144$ times as much in incidence. On the other hand, among families with the same net income, those with a given percentage of rooms per person more than the others had $0{\cdot}742 \pm 0{\cdot}136$ times less incidence.

The association found in Table III between incidence and membership of a doctor's club, receipt of meals or milk at school, and use of a basement room could perhaps be due to the existence of relationships between these attributes and net income or rooms per person, and between the latter and incidence. Of the eight classes into which the families can be divided according to possession or non-possession of the

three attributes, the five which contain a reasonable number of families are shown again in Table V. The top row gives the average net income of the families in each class ; the second shows the average number of rooms per person ; and in the third row the figures of incidence obtained in Table III are repeated.

TABLE V.

Incidence of Rheumatic Heart Disease in Relation to Membership of a Doctor's Club, Receipt of School Meals or Milk, and Use of Basement Rooms (after Approximate Removal of the Effects of X_1 and X_2).

Classification of Families.	Members of a Doctor's Club.	Not Members of a Doctor's Club.			
	Receiving School Meals or Milk.	Receiving School Meals or Milk.		Not Receiving School Meals or Milk.	
	No Basement Rooms. (1)	No Basement Rooms. (5)	Basement Rooms. (6)	No Basement Rooms. (7)	Basement Rooms. (8)
Net Income	161	160	146	160	161
Rooms per Person	1.12	1.12	0.94	1.16	1.14
Actual Incidence	33	95	160	114	132
Incidence Expected from Values of Net Income and Rooms per person ..	100	100	118	97	98
Incidence Adjusted for Differences in Net Income and Rooms per Person.. ..	33	95	136	118	135

Incidence in class (6) was shown in Table III to have been unexpectedly high. The present table indicates that the families in this class had on the whole a relatively low net income and comparatively few rooms per person, and there are also some differences with respect to these conditions between the other classes. But when incidence is adjusted for these differences, it is seen that the relation depicted in Table III is not substantially altered. Looking at columns (1) and (5), families which did not belong to a doctor's club appear to have had a substantially higher incidence than those which did. Comparing columns (5) and (6) and also (7) and (8), the use of a basement room is seen to have been associated with a high incidence. On the other hand, columns (5) and (7), and columns (6) and (8), do not show a clear association between the disease and the receipt of school meals or milk.

Finally, a recalculation made by the author of the relationship between Y,X_1 and X_2, showed no indication that the one originally found reflected the association between incidence and the three attributes.

CONCLUSION.

Review of the existing literature on the effect of social and economic conditions on the incidence of rheumatic heart disease shows that most of the analyses made have been limited in scope and productive of few

conclusions. It has, however, been demonstrated that marked differences in incidence exist between various social classes, and it has also been shown (Perry and Roberts, 1937) that incidence bears a simple and direct relation to the degree of overcrowding.

The information gathered about the living conditions of the Bristol working-class population shows that :—

(*a*) Differences in incidence of rheumatic heart disease between sections of this population were associated with differences in the family income available after paying for rent, rates, travelling and other fixed items expressed as a percentage of minimum needs.

(*b*) Considerable differences in incidence corresponded closely with the variation in the number of rooms used by each family divided by the number of persons in the family.

(*c*) Families which belonged to doctors' clubs suffered less from the disease than did the remainder of the population.

(*d*) There is an indication, though the results are not statistically significant, that families which lived or slept in basement rooms included more cases of the disease than other families.

(*e*) Each one of these relations was true independently of the others.

To what extent these findings, based on the Bristol 1937 experience, apply to the population of the whole country is unknown. But Bristol is a large town, and there is no apparent reason why the relations found should be confined to it.

If these relationships are causal, a considerable reduction in the incidence of rheumatic heart disease could be effected by improvements in living conditions. The figures in Table V enable an estimate to be made of the effect of raising the net income and increasing the housing accommodation of the poorer families. The values in column (7) sum up the combined influence of net income and rooms per person, and may be taken as a measure of the poverty of the families in both respects. A calculation was made by arranging the twenty-seven sets of figures in the table in order according to the expected incidence. The number of families given in columns (3) and (4) were then cumulated, so that the total number of families and the number of rheumatic heart families with living standards equal to, or above, a given level, as measured in column (7), were known. It was then possible to find the number of cases of the disease to be expected if the entire population had had the same living conditions as the families considered, to calculate the percentage reduction in incidence, and, by graphical interpolation, to find the figures below :—

Percentage of the Population with the lowest Net Income and fewest Rooms per Person.	Percentage Reduction in Incidence of Disease due to Improvement in Standards of the Poorest Families.
10	8
30	21
50	29
70	37
90	49

Thus, if the standards of the 30 per cent. of the Bristol working-class population with the most inadequate incomes and housing

accommodation were raised to the average level of the rest of the working-class population, a decrease of 21 per cent. in the number of cases of rheumatic heart disease could be expected. And if standards were raised to the level of the highest 10 per cent. of all working-class families, the incidence of the disease would be roughly halved.

Whether income and housing conditions actually determine the incidence of the disease in this way is not, however, established by the statistical relationships which have been revealed in preceding sections of this paper. It is necessary to consider whether these relations can be accounted for in other ways.

The data collected by the Bristol Social Survey throw no light on the effects of differences in geographical environment or in hereditary constitution. But the variations in altitude, soil, climate, etc., within the City of Bristol are minute, and could hardly account for the relationships we have found. Explanation in terms of heredity is equally difficult, since it would require that families with an inherited tendency towards rheumatism should tend to have low net incomes, and also to have poor housing conditions and refrain from joining doctors' clubs.

The present information relates only to families with children of school age. All of these children attended State schools and, outside their homes, their environment could have differed comparatively little. Thus, not only are the present results unlikely to have been due to the influence of hereditary or geographical agencies, but the possible effects of occupational differences, which in the case of adults might have complicated those of income and housing, have been avoided.

Again, this investigation has been concerned not with the individual children suffering from rheumatic heart disease, but with the families containing such children. Rheumatic disease may be infective. If so, the proportion of children in a family suffering from it would tend to be greater in large families than in small. Since size of family is an important cause of poverty and inadequate housing accommodation, there is, therefore, a possibility that a correlation disclosed between incidence and net income or between incidence and rooms per person could be due merely to the increased likelihood of infection in large families and the tendency for such families to have low standards of living. This possibility has been guarded against by confining examination to family units and giving those with three children suffering from the disease the same weight as those with only one.

The independent variables which have been considered are of broad scope, and exactly how they affect incidence it is not possible to say. Net income, for instance, may be related to the disease, because it limits the consumption of certain essential foodstuffs, or because it determines the adequacy of clothing or heating. New and detailed enquiries would be necessary to isolate the specific factors involved. What the present investigation shows is that rheumatic heart disease appears to be in large part a social disease, and that considerable differences in its incidence are attributable to conditions associated with : (*a*) the income available after deduction of rent, rates, travelling and other fixed payments ; (*b*) the number of rooms available per person ; (*c*) the membership of doctors' clubs ; and, (*d*) though less certainly, the use of basement rooms.

REFERENCES.

Atwater, R. M. (1927). Studies in the Epidemiology of Acute Rheumatic Fever and Related Diseases in the United States, based on Mortality Statistics. *Am. J. Hygiene*, VII, 343.

Clarke, J. T. (1928). The Pathogenesis of Rheumatic Fever in its Climatological Relationship to a Possible Insect Carrier. *Proc. Roy. Soc. Med.* Sect. Epidemiol. and State Med., XXI, 1004.

Coates, V., and Thomas, R. E. (1925). Rheumatic Infection in Childhood. *Lancet*, 1925, II, 326.

Coombs, C. F. (1927). Rheumatic Infection of Childhood. *Lancet*, 1927, I, 579 and 634.

Faulkner, J. M., and White, P. D. (1924). The Incidence of Rheumatic Fever, Chorea and Rheumatic Heart Disease with Especial Reference to its Occurrence in Families. *J. Am. Med. Ass.*, LXXXIII, 425.

George, R. F. (1937). A New Calculation of the Poverty Line. *Jour. Roy. Stat. Soc.*, 1937, C, 74.

Hill, N. G. (1928). The Rheumatic Child. *Brit. Jour. Child. Dis.*, XXV, 270.

Hill, N. G., and Allan, M. (1929). The Rheumatic Type. *Brit. Med. Jour.*, 1929, II, 499.

Maddox, K. (1937). Metropolitan and Rural Incidence and Distribution of Acute Rheumatism and Rheumatic Heart Disease in New South Wales. *Med. Jour. Australia*, 31st March, 394, 20th March, 425, 27th March, 464, 3rd April, 499.

McCulloch, H. (1928). Rheumatic Heart Disease : Its Importance as a Disease of Children. *Jour. Am. Med. Ass.*, XC, 2073.

Medical Research Council (1927). Child Life Investigations : Social Conditions and Acute Rheumatism. *Med. Res. Coun. Special Report Series* No. 114.

Miller, R. (1926). Report on Rheumatic Disease in Children : I. Report on the Environmental and Other Predisposing Causes of Rheumatic Infection. *Suppl. Brit. Med. Jour.*, 3rd July, 1926.

Miller, R. (1928). Some Public Health Aspects of Juvenile Rheumatism. *Proc. Roy. Soc. Med.* (Sect. Epidemiol. and State Med.), XXI, 997.

Miller, S., and Wilson, J. V. (1939). Nutrition and Diet in Rheumatism. *Med. Press and Circ.*, CCI, Nos. 16 and 17, 390 and 411.

Newsholme, A. (1895). The Natural History and Affinities of Rheumatic Fever : A Study in Epidemiology. The Milroy Lecture, *Lancet*, 1895, I, 589 and 657.

Paul, J. R. (1930). The Epidemiology of Rheumatic Fever. Printed by the *Metropolitan Life Insurance Company*.

Perry, C. B., and Fraser Roberts, J. A. (1937). A Study on the Variability in the Incidence of Rheumatic Heart Disease within the City of Bristol. *Suppl. Brit. Med. Jour.*, 1937, II, 154.

Sutton, L. P. (1928). Observations on Certain Aetiological Factors in Rheumatism. *Am. Heart Jour.*, IV, 145.

Thomson, A. P. (1926). A Study of Rheumatism in Children. *Birmingham Med. Rev.*, n.s. I, No. 7.

Tout, H. (1938). The Standard of Living in Bristol.

Vining, C. W. (1928). The Pre-Rheumatic Child. *Med. Jour. and Rec.*, CXXVIII, 351, 395 and 453.

Young, M. (1921). A Preliminary Study on the Epidemiology of Rheumatic Fever, *Jour. Hyg.*, XX, 248.

Young, M. (1925). The Geographical Distribution of Heart Disease in England and Wales and its Relation to that of Acute Rheumatism. *Lancet*, 1925, II, 590.

Reviews of Books

Treves' "Students' Handbook of Surgical Operations." By C. P. G. WAKELEY, C.B., F.R.C.S. Seventh Edition. Pp. xii., 562; 265 illustrations. London: Cassell & Co. Ltd. 1943. Price 12s. 6d.—This hardy perennial first made its appearance in 1892 and there must be few medical men who do not remember from student days the excellent plates illustrating amputations and ligation of vessels. Many of them have successfully weathered the half-century. Even such set operations have been drastically pruned in accordance with modern practice and a large part of the volume has been completely re-written. One might criticize some of the operations, *e.g.* phrenic avulsion as a treatment for bronchiectasis; excision of the head of the first metatarsal for hallux valgus; disarticulation through the wrist joint (which makes the fitting of an artificial hand very unsatisfactory); and the introduction of a Smith Petersen pin only by means of an open operation. Curiously enough, excision of the condyle of the mandible is described twice: once on page 198, with an illustration in which the temporal muscle is labelled the masseter, and again on page 245. In spite of these few small blemishes a student or house surgeon will find this handy little book packed full of useful and easily assimilable information.

The Medical Annual, 1943. Edited by SIR HENRY TIDY, K.C.B., and A. RENDLE SHORT, M.D., F.R.C.S. Pp. lx., 432, 75. Bristol: John Wright & Sons, Ltd. Price 25s. net.—Although the *Medical Annual* for 1943 is somewhat late in coming out we are glad to find that the Ministry of Supply has allocated sufficient paper to allow of its being slightly larger than the former issues during this war. This recognition of its great value to the Medical profession is well merited. Wartime medicine and surgery are continually changing and progressive, thus Wright's *Medical Annual* is even more indispensable now that current literature, except that published at home, is hard to come by. Perhaps the most important feature of this year's *Annual* is Mr. D. Harcourt Kitchin's summary of "Legal Decisions" affecting the medical profession, especially that which concerns the liability of hospital authorities for negligence of their medical officers. Wakeley on "Burns of War" is first rate. The articles on "Typhus" and "Yellow Fevers" are of great importance to all service M.O.'s. In the introduction special attention is directed to articles dealing with the "Dangers of New Therapeutic Measures," three particular groups of treatment are singled out for warning namely, sulphonamide administration, electro-convulsive therapy and the management of Addison's disease. In every branch of the Art and Science of Medicine practitioners will be safer and wiser for reading Wright's *Annual*.

Tropical Nursing. Second Edition. By A. L. GREGG, M.A., M.D., M.Ch., D.T.M. & H. 1943. London: Cassell & Co. Ltd. Pp. x., 185. Price 6s. net.—Dr. Gregg's little book can be warmly recommended to nurses and ordinary folk going to the tropics. Thanks to the care with which the first edition was prepared, few changes in the advice on nursing have been needed in the second edition. Such changes as there are have occurred mainly in treatment, that is to say, drugs and diet. The text is clearly written, and if treatment must, in emergency, be given before medical aid can be obtained, this book should be of real help. On one or two points of treatment criticisms suggest themselves. On page 92, quinine *per rectum* is advised in certain circumstances, but this method has been abandoned by the majority of authorities as inefficacious. Even if ampoules are not available it should be possible for a nurse to boil a solution of quinine in a test-tube for intra-muscular use and render it sterile. Antimony has proved of great value in a number of tropical diseases, and considerable progress has been made in developing new compounds. When, therefore, it is pointed out that for the treatment of bilharziosis other antimony compounds are superseding the tartrate, it was a pity not to mention such compounds as has been done in the case of kala-azar (stibosan, stibamine and diamidinostilbene). For ulcerating granuloma antimony tartrate is still (p. 140) the only remedy mentioned, although neo.-stibosan is now usually preferred. Under treatment of ascaris (p. 69) some excellent advice is given about the use of vermifuges, and the safety of employing castor oil with santonin is wisely pointed out. The dangers of oil of chenopodium for very young children and of repeating the dose of carbontetrachloride are, unfortunately, not mentioned. Deeks never gave oil of chenopodium to children under four years of age, and always followed it with a purge of salts within one to one-and-a-half hours. The comparative safety of hexylresorcinol is rightly mentioned. Dr. Gregg makes an interesting recommendation (p. 6) that dark-coloured or black underwear should be worn in the tropics. Has dark underwear been proved in practice to be cooler? There are possible disadvantages in dark-coloured underwear unless high quality fast dye is used. Perspiration might cause an inferior dye to run, with resultant irritation of the skin and possible sepsis. The book as a whole is so good that it is hoped that the author may consider these few points of criticism when he comes to prepare a new edition—perhaps, too, he will see that Sir Philip Manson Bahr's name is correctly spelt on p. viii.

Sixth Addendum to British Pharmacopoeia. 1932. Official from August 1st, 1943. Six months' grace allowed for B.P. Ointments amended in this Addendum. The Addendum contains a number of very important additions and alterations.

ADDITIONS.

ACETOMENAPHTHONUM. MENAPHTHONUM. Oral and parenteral forms respectively of Vitamin K., hitherto chiefly prescribed and supplied as the products of various firms under their own Brand names.

RIBOFLAVINE. The new official form of Vitamin B_2, recognizing both natural and synthetic sources.

AC. RICINOLEIC TERPINEOL. Both included for use in the preparation of Liq. Chloroxylenolis.

LIQ. CHLOROXYLENOLIS. A useful antiseptic of the Dettol type.

DITHRANOL. A yellow powder for use in skin ointments and pastes, replacing a well known German proprietary.

NICOTINAMIDE. A more modern application of the Pellagra Preventive Vitamin.

STILBOESTROL. Synthetic Oestrogenic substance for oral and parenteral use. The Addendum defines it further as DIETHYLSTILBOESTROL.

INSULIN. Storage conditions and pH. limits extend the period of potency to two years from date of manufacture.

ERGOT. The monograph now takes Ergometrine as the basis of activity instead of Ergotoxine.

SYR FERRI PHOSPH. c STRYCH. The equivalent of Easton's Syrup without the Quinine, which is now not available except for Malaria treatment.

SULPHANILAMIDE. The monograph on its sterilization establishes 150° for one hour, or 140° for four hours, as the heat limits for efficient sterility.

ALCOHOLIA LANAE. The product of saponification of the grease of sheep's wool with fractionation of part containing Cholesterol (28 per cent.), and other Alcohols is introduced as the basis for preparing :—

1. Ung. Alcoholia Lanae.
2. Ung. Aquosum.
3. Ung. Ac. Boric.
4. Ung. Ac. Sal.
5. Ung. Ac. Tannic.
6. Ung. Hamamelis.
7. Ung. Hyd. Ammon.
8. Ung. Hyd. Oleat.
9. Ung. Hyd. Subchlor.
10. Ung. Hyd. Sulph.
11. Ung. Zinc. Ox.

This is a notable alteration in B.P. Ointment bases, and it remains to be seen whether the skin physicians will approve the change. The new ointments are of very nice smooth consistence and appear to be an improvement on the older ointments.

KAOLIN. Now appears in two forms, Light and Heavy ; the former for internal use and the latter for the manufacture of Cataplasma Kaolin Co.

MAG. TRISILICATE. New standards for Silicon content are laid down.

INJECTIO PROCAINE AND ADRENALIN. The title of this preparation which contained 2 per cent. of Procaine is changed to INJECTIO PROCAINE AND ADRENALIN FORT, and a weaker preparation is introduced under the name of INJECTIO PROCAINE AND ADRENALIN MITIS, containing only about ½ per-cent. of Procaine.

Diseases and the Social System. By ARTHUR GUIRDHAM, M.A., D.M., B.Sc., D.P.M. Pp. xvi., 239. London : George Allen and Unwin Ltd. 1942. Price 10s. 6d.—" This book is written for the profession in general, and in particular for the inarticulate majority, for whom man and his sufferings are of greater moment than the findings of group research." It is regretted that a reviewer has not been found from the inarticulate majority, but in order to bring the book to its notice some description of its contents will be given. From the dust-cover one learns that the book emphasizes that disease is due largely to our social system, it argues that the beliefs we inherit are responsible not only for psychological but for physical disease. Most disease, the author holds, is a response to, or an evasion of, strain. At present the administration of Society rests largely in the hands of the abnormal and diseased. The author deplores the influence of Pasteur, saying " he retarded the progress of medicine by a hundred years." He feels that some day psychiatry and general medicine will have merged, at present psychiatry is a branch of medicine. The

position should be reversed. But not until psychiatry asserts itself in the domain of physical disease. Surgery he dislikes as being blind carpentry performed by persons of inadequate culture. When, despite medical treatment, the violent corrective of surgery must be applied, "we are making a patchwork effort for those who have failed to adjust to circumstances as a whole." The maimed victim of a high explosive bomb can scarcely be blamed for maladjustment to circumstances, but let that pass. The author divides his book into four sections. The first deals with personality in relation to disease. The second explains how most chronic disease, physical as well as nervous, is neuropathic in nature and attributable to the effect of abnormal emotion on vulnerable personalities. The third reviews the effect of the social system in providing a background conducive to abnormal emotion. The last section deals with tendencies in medicine which prevent our dealing adequately with current problems. At the end of the book the author's chief reason for writing it is manifest. "We doctors," he writes, "must insist on playing a major part in the cure of a sick world." Well, yes, perhaps we doctors might, provided we are as humble as Paré: "*Je le pansay, Dieu le guarit.*" But I doubt whether the author intends to play the part of a bandager, waiting for the divine healer. It is interesting to see the influence upon a psychiatrist of observing psychical causes produce organic changes in the human body.

Outlines of Industrial Medicine, Legislation and Hygiene. By JAMES BURNET, M.D. Pp. 87. Bristol: John Wright & Sons Ltd. Price 7s. 6d.—This small and readable volume is intended for students and others who may require an introduction to the subjects with which it deals. Part I is devoted to Industrial Diseases, and includes Poisons, Medical Diseases, Surgical Affections, Diseases of the Eye, and Skin Diseases. The descriptions are concise and on the whole accurate. Part II discusses Industrial Legislation. The author is not always reliable in his accounts of the Law, although his statements may accurately describe things that are customary, although not lawful. For instance. In his chapter (V) on Skin Diseases, he says that if a workman's application to an appointed surgeon for a certificate that he is suffering from a compensatable disease is refused, he will get neither National Health Insurance benefit nor compensation. But as the law stands the workman who is refused a certificate under the Workmen's Compensation Acts is entitled to N.H.I. benefit, provided he has his panel doctor's certificate that he was unfit for work. The decision of the certifying surgeon, not that of the Approved Society, is final, unless disturbed by the Medical Referee on appeal. The author does not at this point mention that a refusal of a certificate by the appointed or certifying surgeon that a disease or injury comes under the Workmen's Compensation Act can be appealed against by the workman. A little further on (p. 50) he says that because a skin condition may have cleared up, the Referee on appeal "can only certify that the worker is not suffering from dermatitis." This is frankly nonsense. The Referee is bound to accept the "appointed" surgeon's certificate unless evidence is brought to show that when the workman

was examined "by the examining surgeon" he was not, in fact, suffering from the scheduled disease. The certificate is sufficient and final evidence that the workman was so suffering until upset by convincing evidence to the contrary. That the workman is not so suffering at the time of his examination by the Medical Referee should not, without other evidence, cause the Referee to allow an appeal. A grave omission on the author's part is his failure to quote the obligation placed on Approved Societies by the National Health Insurance to pay a workman weekly benefit "as an advance by way of a loan" where the workman has applied for compensation and the employer disputes his liability to pay or delays payment. Nowhere does the author remind his readers that the certificate of the certifying surgeon must state that the dermatitis is "produced by dust or liquids." He is content to say "practically anything to which a worker's skin may become senstitized will readily produce dermatitis." He does not add that the schedule to the Acts only recognizes dermatitis produced by dust or liquids. Doubtless the Acts need amendment, but there is the law as it stands. The book is a good book as a guide to Industrial Diseases, but, on questions of Law, Willis or Butterworth is greatly to be preferred. And it is most desirable that industrial surgeons, as well as certifying surgeons and medical referees, should know the legal as well as the medical aspects of the work they undertake. The author gives the impression that he has not studied Case Law on his subject.

Editorial Notes

Mr. Winston Churchill and Standish House.

STANDISH HOUSE, now the Gloucestershire Tuberculosis Sanatorium, has the distinction of having belonged to the family from whom the Prime Minister and Chancellor of our University, derives his first christian name. A recent note in *Country Life* pointed out that Sir Winston Churchill, father of the great Duke of Marlborough, obtained his christian name from the surname of his mother. She was Sara, daughter and heiress of Sir Henry Winston of Standish, Gloucestershire, and she married John Churchill in 1618.

* * * * *

"The Practitioner."

WE offer our congratulations and good wishes to *The Practitioner* on celebrating its seventy-fifth anniversary. *The Practitioner* was founded in 1868 under the joint editorship of Francis Edmund Anstie, then Senior Assistant Physician, Westminster Hospital, and Henry Lawson, Assistant Physician, St. Mary's Hospital. Anstie is a name well known in Bristol. The family were tobacco manufacturers at Devizes, and the business still flourishes, managed by the family as a branch of the Imperial Tobacco Company. In the June, 1943, issue of *The Practitioner*, Sir Humphry Rolleston has contributed an article on the history of the Journal, in which memoirs of the former editors are collected. The longest and most interesting memoir is that of Anstie, whose ideals have inspired the Journal from its inception to the present time, namely, to provide an essentially practical publication with special emphasis on the latest information on the treatment of disease. This emphasis on what Sir Thomas Watson described as "the greatest gap in the Science of Medicine," namely, our knowledge of therapeutics, continues to be the reason for the success of *The Practitioner* under its present controlling Editor, Sir Humphry Rolleston, and the Joint Editor, Dr. Alan Moncrieff.

* * * * *

New Regulations for the F.R.C.S.

THE Council of the Royal College of Surgeons of England has revised the regulations of the Fellowship and at last the diploma of F.R.C.S. can be regarded as a qualification equivalent to a Mastership of Surgery. The Council is to be congratulated on having adopted the view that the F.R.C.S. should be confined

to those who practise the higher branches of surgery, just like the Fellowships of the other two English Colleges. The *primary* examination beginning on November 29th, 1943, will be the last to be conducted under the present regulations.

New regulations have been approved by the Council and will become effective as from the end of 1943.

These regulations embody the following changes :—

(i.) The *primary* examination cannot be taken by undergraduates, but will be open only to Members of the College, or to Graduates in medicine and surgery of the Universities and Medical Colleges recognized by the Council for the purpose, who are able to comply with the conditions of the regulations.

(ii.) The subjects of the primary examination will be :— (a) *Anatomy* (*including Normal Histology*), *and* (b) *Applied Physiology and the Principles of Pathology.* A synopsis indicating the general scope and spirit of the examination in *applied physiology and the principles of pathology* is published in the new regulations.

With regard to the *final* examination, no candidate will be admissible without producing evidence of having been engaged in the acquirement of professional knowledge for not less than two years subsequent to the date of having obtained the Membership of the College or some other recognized qualification, *vide* (i.) above.

The dates of the examinations have been re-arranged, so that it will be possible for candidates who pass the *primary* examination to proceed immediately to the *final* examination, if they are eligible. During 1944 the examinations will begin on the following dates :—

Primary examination—April 24th and October 23rd.
Final examination—May 4th and November 2nd.

Copies of the new regulations, and full particulars may be obtained, post free, from the Director of Examinations, Examination Hall, Queen Square, London, W.C. 1.

Obituary

EMERITUS PROFESSOR F. H. EDGEWORTH, M.A., M.D. (Cantab.), D.Sc. (Lond.).

By the passing onwards of Francis Henry Edgeworth the medical profession has lost one of its most learned members, and the scientific world has been deprived of an eminent and indefatigable research worker. The son of Dr. T. F. Edgeworth, and beginning his education at Clifton College, Edgeworth went on to Caius College, Cambridge, with

a scholarship, and secured a first in the Natural Science Tripos, graduating in 1887, and becoming Shuttleworth Scholar of Caius. He then entered the Bristol Medical School, taking his M.B., B.C. (Cantab.), thence proceeding to Paris, Gottingen, London, and Dublin for further medical training. He became D.Sc. (Lond.) in 1903, and M.D. (Cantab.) in 1908, was honorary pathologist to Bristol Royal Infirmary from 1890 to 1895, and was appointed Assistant Physician in 1893, being elected Physician in 1906, which post he held until 1924, when he became an Honorary Consulting Physician. In 1905 he became Professor of Medicine in University College, Bristol, and later occupied the Chair of Medicine in the University, being appointed Emeritus Professor on his retirement. During the Great War he served in the R.A.M.C. from 1914 to 1918, being attached to the 2nd Southern General Hospital, and retiring with the rank of Major.

Edgeworth published many valuable monographs in the realms of science and medicine, but his *opus magnum* was a volume published in 1935 by the Cambridge University Press and entitled *The Cranial Muscles of Vertebrates*. This publication involved a colossal amount of work in the preparation and microscopic examination of sections from various types of embryo, and also the execution of a very large number of drawings made from these sections. A considerable amount of time was spent by him on the construction of large models, made to render him assistance in arriving at his conclusions. In the course of this work he realized that Mind played an important part in directing embryonic growth. In some unknown way the growing organism appears to forsee future needs and sets to work with such material as it has to develop the necessary structures along the lines followed by its ancestors. Experimental embryology shows that the growing organism, from the zygote upwards, is a whole, and not merely an aggregate of parts. Similarly animals are psychological units characterized by memory and purpose by striving after ends in view. The variations in the development of homologous structures, and in the structures by which the same function is carried out show that this psychological factor is of great importance from the very first. This immaterial, non-spatial, teleological factor, the Mind, can initiate and inhibit physico-chemical processes. Life, development of individual organisms, and evolution are primarily due to this power. As to the origin of Mind he was an opponent of epiphenomenalism, and a disciple of Plato.

In his work as a physician Edgeworth recognized that medicine was primarily a clinical science and relied very largely on his own observations made at the bedside, seeking the assistance of laboratory workers to help in or confirm his own diagnosis, rather than make one for him. He adopted this attitude with the knowledge that a clinical examination systematically conducted is as much scientific as the determination of blood-sugar or the identification of bacteria in sputa. All his patients were treated with the same degree of skill and with the greatest kindness, no distinction being made between Dives and Lazarus. It is not easy to say in what branch of medicine Edgeworth was most expert, but it was probably in the difficult art of differential diagnosis, especially in relation to diseases of the central nervous system.

RONALD HENRY TASKER, M.R.C.S., L.R.C.P.

In 1896 Edgeworth married Miss Ethel Maude Usher, a lady of considerable intellectual attainments, who was in complete sympathy with all his scientific aspirations, and encouraged and helped him in his work in every possible way. She predeceased him in 1931, and one of the chief objects of his life disappeared with her demise. The dedicatory words to her memory which appear in his book speak for themselves regarding the part she played in his life. "In memoriam uxoris meae quae mihi, ut in ceteris rebus, ita in hoc opere et socia erat et adiutrix." Edgeworth never ceased in his endeavour to add to the sum of human knowledge, and quite failed to recognize his own attainments. He leaves a son, a naturalized American citizen, at present serving with the forces of the country of his adoption.

O. C. M. D.

RONALD HENRY TASKER, M.R.C.S., L.R.C.P.

THE tragic death of Ronald Henry Tasker, in November, 1942, will be felt as a deep personal loss to many old students of the Bristol Medical School where he began his training in 1909. He attended the clinical practice of the Bristol General Hospital, to which he was later House Surgeon and House Physician, and served during the last war as Temporary Surg. Lieut., R.N., in H.M.S. *Centurion*. After leaving the Hospital he held resident appointments at Herefordshire General Hospital, Taunton Hospital, and Ham Green Hospital, Bristol. In 1926 he became Medical Officer to the Burmah Oil Company, for whom he worked enthusiastically and well for sixteen years. The Japanese invasion found him in charge of the Company's hospital in Syriam, Rangoon, and he was greatly saddened by witnessing the destruction of the station and by sustaining the loss of his valuable collection of books, cuttings, and stamps, together with all his personal belongings. After the demolitions were completed he made an adventurous escape to India, finishing the remainder of his term of office in Assam. He was on his way home when his ship was torpedoed in the South Atlantic. With 53 others Tasker was adrift in a lifeboat for many days, and only two survived the ordeal. The sole survivor to reach England, the other being now a prisoner of war, has told the grim story of the events resulting in his untimely death.

In 1930 he married Miss Dorothy Buckmaster, M.B., B.S., daughter of the late Professor of Physiology of Bristol University, and he leaves her with a young son and daughter. The deepest sympathy is extended to his wife in her overwhelming loss.

Ronald Tasker's joyful personality was many sided, but in everything he undertook he was meticulous, keen, skilful, and loyal. All his professional work was characterized by great ability and carefulness, and Burma afforded him ample opportunities for using his surgical skill. The homage he always paid to his teaching school and to those who were his mentors inspired his work, while attention to detail, clinical honesty and acumen rendered him a very worthy member of his profession.

He was very widely read and even while a student he had begun to

build up a fine library, in which his favourite subjects, anthropology and comparative religion, were well represented.

Yet to very many, both in this country and in the East, his name will ever be remembered for his prowess in athletics. From boyhood and until the year of his death he was an ardent and active sportsman. He played for the University in hockey and association football, was a county player in football, tennis, and badminton, and in his student days played, as an amateur, for Bristol City, then in the second division of the Football League. While playing games with skill and utter enjoyment, he studied them with the same care as he would give to a scientific problem. His opponents knew him as a relentless but just adversary, popular with all.

Vital, companionable, abounding in energy and high spirits—to have made Tasker's acquaintance was a real pleasure, to have known him well was the privilege of a lifetime. By his innate good nature and sincerity he enjoyed the affection and regard of his fellow men in widely different spheres of life. His sad fate will leave a gap in the lives of his friends which will never be filled.

JOHN LACY FIRTH, M.D., M.S.(Lond.), F.R.C.S.

LACY FIRTH, a former president of the Society and Consulting Surgeon to the Bristol General Hospital—whose sudden death on April 26th, 1943, we deeply deplore—had for many years done valuable but unspectacular service to the Society and the *Journal*. In 1901 he began his work as reporter of the Society's Meetings, a task which he undertook at the request of the Editorial Committee, of which he was a member. He continued to write the reports of the meetings until 1913, and the records of our meetings have never before or since been so full and accurate. In addition, he had charge of the reviewing section of the *Journal*, and in his quiet way jogged the memories of sluggish reviewers so that authors and publishers had few grounds for complaining of delay in the appearance of book reviews. In 1923–24 he was President of the Society and took as the subject of his address "The Evolutionary History of Renal Surgery and of Temporal Bone Surgery." A conjunction of subjects which denoted his dual rôle as a general and aural surgeon. Firth belonged to the period when aural surgery had not yet become fully allied with laryngology and rhinology to form a speciality.

Firth came to Bristol as House Surgeon to the General Hospital after a distinguished student career at Owens College, Manchester, and University College Hospital, London, where he had been one of Marcus Beck's surgical dressers. He took an exhibition and gold medal in Physiology and Anatomy at London University in 1886, Honours in Anatomy and Materia Medica and Honours in Obstetrics, qualifying M.R.C.S. in 1888, and M.D. London in 1889. In 1893 he obtained the F.R.C.S. England as well as the M.S. London.

In 1896 he was elected Assistant Surgeon to the Bristol General Hospital and Surgeon in 1902. Later he was given charge of the newly formed ear, nose and throat department. He retired from

the active staff in 1926, and was made Honorary Consulting Surgeon. During the 1914–18 war he held the rank of Captain R.A.M.C. on the *à la Suite* Staff of the 2nd Southern General Hospital (Territorial) in Bristol. Mr. Lacy Firth was born at Blackburn on January 21st, 1866, the son of Thomas Firth, a Blackburn millowner and Betty Fielden Lacy. In 1908 he married Winifred Mary, daughter of Lewis Edmund Naish (of Bristol) and widow of Henry Ernest Grace (of Bristol). To his widow, we offer our deepest sympathy.

The Medical Library of the University of Bristol

WITH WHICH IS INCORPORATED

The Library of the Bristol Medico-Chirurgical Society

The following donations have been received since the publication of the list in the last issue.

British Postgraduate Medical School (1)	(unbound)	3 volumes.
Brompton Hospital (2)		1 volume.
Mrs. E. Fawcett (3)		10 volumes.
Dr. Josef Heller (4)		2 volumes.
Michell Clarke Bequest (5)		6 volumes.
Mrs. Muirhead (6)		1 volume.
Sheffield University (7)		2 volumes.
Universities' Federation for Animal Welfare (8) ..		1 volume.
Dr. H. Secker Walker (9)		5 volumes.
General Medical Council (10)		1 volume.

Unbound periodicals have also been received from Dr. S. B. Adams, Professor E. W. Hey Groves, Dr. T. Milling, Professor C. Bruce Perry, Dr. J. Odery Symes, Messrs. John Wright & Sons Ltd.

THE ONE HUNDRED AND SEVENTY-SEVENTH LIST OF BOOKS.

The figures in round brackets refer to the figures after the names of the donors. The books to which no such figures have been attached have either been bought from the Library Fund or received through the *Journal*.

Bevington, S. M.	*Nursing Life and Discipline*		1943
Beyer, H.	*Die Operationen am Ohr*	(4)	1932
Bowman, A. K.	*The Life and Teaching of Sir William McEwen*		1942
Boyd, Wm.	*Textbook of Pathology*	4th Ed.	1943
Charras, M.	*The Royal Pharmacopoeia, Galenical and Chymical*		1678
Clendenning, L.	*Source book of Medical History*		1942
Dieckmann, W. J.	*Toxemias of Pregnancy*	(5)	1942
Documents Medicaux		(3)	
Edridge-Green, F. W.	*Colour-blindness and colour perception*	2nd Ed. (9)	1909
Encyclopaedia Medica	Volume 15 (1st Supp.)	(6)	1910
Fisher, R. A.	*The Design of Experiments*		1942
Forkner, C. E.	*Leukaemia and allied disorders*	(5)	1938
Fry, K. et al	*The Dental Treatment of Maxillo-facial Injuries*		1943
Gibberd, G. F.	*A Short Text-book of Midwifery*	3rd Ed.	1943
Gibson, W. M.	*Dental Prosthetics*		1941
Glaister, J.	*Medical Jurisprudence and Toxicology*	7th Ed.	1942
Gray, H.	*Textbook of Anatomy*	28th Ed.	1942
Guedel, A. E.	*Inhalation Anæsthesia*	(5)	1937
Hadfield, G., and Garrod, J. P.	*Recent Advances in Pathology*	4th Ed.	1942
Hall, I. S.	*Diseases of the Nose, Throat and Ear*	2nd Ed.	1941
Hewer, C. L.	*Recent Advances in Anæsthesia and Analgesia*	4th Ed.	1943
Hill, A. V.	*Adventures in Biophysics*		1931
Horne, W. J. and Cheatle, A. H.	*Descriptive Catalogue of Museum of 6th Internat. Otolog. Conference of* 1899	(9)	1900
Hueper, W. C.	*Occupational Tumors and Allied Diseases*		1942
Hunter, J.	*Natural History of the Human Teeth*	(7)	1781
Illingworth, C. F. W.	*Textbook of Surgical Treatment*		1943
Illingworth, C. F. W., and Dick, B. M.	*A Textbook of Surgical Pathology*	4th Ed. (Rept.)	1943
Lamb, F. W.	*Introduction to Human Experimental Physiology*		1930
Langdon-Brown, W., and Hilton, R.	*Physiological Principles in Treatment*	8th Ed. (5)	1943
Lavater, J. C.	*Essays on Physiognomy*	5 Vols.	1810
Lewis T.	*Diseases of the Heart*	3rd Ed.	1943

Macintosh, R. R., and Bannister, F. B. *Essentials of General Anæsthesia* 3rd Ed. 1943

Marrack, J. R. .. .. *Food and Planning* 1943

Minutes of the General Medical Council. LXXIX for 1942 .. (10) 1943

Neal, J. B. .. .. .. *Encephalitis* 1942

Nightingale, F. .. .. *Notes on Hospitals* .. .. (7) 1863

Politzer, A. .. .. *Lehrbuch der Ohrenheilkunde.* 3te Aufl .. (9) 1893

Seiffert, A. .. .. .. *Die Operationen an Nase, Mund und Hals* (4) 1936

Souder, W., and Paffenbarger, G. C. *Physical Properties of Dental Materials* 1942

Syme, J. .. .. .. *Contributions to the Pathology and Practice of Surgery* .. .. (9) 1848

Tandler, J. .. .. .. *Anatomie des Herzens* .. .. (3) 1913

Ten Teachers .. .. *Midwifery* .. .. 7th Ed. 1942

Vaccine and Serum Therapy .. .. (9) 1935

Yoffey, J. M. .. .. *In Memoriam, Edward Fawcett* .. (Pamphlet) 1943

Wright, J. G. .. .. *Veterinary Anæsthesia* .. .. (8) 1942

TRANSACTIONS, REPORTS, JOURNALS, ETC.

Brompton Hospital Reports. Vol. XI .. .. (2) 1942

Collected Papers of the British Postgraduate Medical School, 1939-42. 3 vols. .. .. (1) 1942

Dental Board of the United Kingdom Reports .. .. (3)

The Dentists Register 1943

General Medical Council, Minutes, 1942 1943

The Hospitals Yearbook 1942

The Medical Directory 1943

The Medical Annual 1943

Quarterly Cumulative Index Medicus. Vols. 31 and 32 1942

Quarterly Cumulative Index Medicus. January to March 1943

Transactions of the Opthalmological Society. Vol. 61 1941

Transactions of the Ophthalmological Society. Vol. 62 1942

The Yearbook of Radiology .. .. (5) 1942

The Yearbook of Eye, Ear, Nose and Throat .. .. (5) 1942

Publications Received

From The British Pharmacopoeia Commission:

Sixth Addendum to the British Pharmacopoeia, 1932–1943.

From Messrs. Cassell & Co. Ltd.:

Modern Operative Surgery (Carson's). Volume I. Edited by G. Grey Turner, F.R.C.S. Price 50s. 1943.

Students Handbook of Surgical Operations (Treves). Edited by C. P. G. Wakeley, F.R.C.S. Price 12s. 6d. 1943.

From Messrs. H. K. Lewis & Co. Ltd.:

Guide to F. A. Treatment of Home Guard Casualties. By T. H. Meek. Price 4s.

Physical Exercises for Asthma. Issued by The Asthma Research Council. Price 1s.

From The Oxford University Press (Oxford War Manuals):

Ear, Nose and Throat in the Services. By W. Stevenson. Price 5s.

Scabies. By F. Mellanby. Price 5s.

From Messrs. John Wright & Sons Ltd.:

Electrocardiograms. Second Edition. N. Jones and E. Noble Chamberlain. Price 5s.

Infant Feeding in General Practice. Second Edition. By J. V. Braithwaite. Price 7s. 6d.

Synopsis of Surgical Anatomy. Fifth Edition. By A. Lee Macgregor. Price 25s.

British Journal of Surgery. Volumn XXX. Nos. 119, 120. Price 12s. 6d. each.

Symptoms and Signs in Clinical Medicine. Third Edition. By E. Noble Chamberlain. Price 30s.

Local Medical Notes

EXAMINATION RESULTS.

University of Bristol.—Students of the University have recently passed the following examinations :—

M.B., Ch.B.—*First Examination. Pass :* Barbara Brosnan, R. J. Carey, Suzanne K. R. Clarke, Vera H. M. Dowling, D. N. Fitzgerald, Anne M. French, J. C. Gregg, B. T. Hale, R. B. Handscombe, Pamela I. Hannaford, Ruth E. Hazell, A. H. Levy, June Morgan, Frances W. Parrott, D. B. Peacock, Jenny Pym, Jacqueline I. Shaw, P. J. Speller, B. F. Vaughan, M. P. Walker, Pamela L. C. Watson, Audrey M. Wells, R. H. Wood. *In Chemistry :* Kathleen J. Harrison,† A. J. Lee.†

M.B., Ch.B.—*Second Examination* (*Section I*). *Pass :* J. H. Beatson, W. H. K. Carpenter, M. J. Dunn, W. H. N. Moore, Eleanor B. Webb, Norma M. Whalley, G. Winternitz. (*Section II—Completing the Examination.*) Patricia M. Appleton, W. E. Arnold, Dorothy J. Blake, Kathleen Blott, D. E. Bolt, W. H. K. Carpenter, P. J. Chapman, Elizabeth H. Collis, M. J. Dunn, Pamela M. Farmer, H. L. Jones, M. B. Lennard, J. C. Little, Florence E. Moore, J. H. K. Parker, Hazel M. Passmore, H. S. Paull, C. D. R. Pengelly, Dorothy E. M. Pierce, R. G. G. Taylor, Jean Tregear, K. D. J. Vowles, Kathleen G. Wright.

M.B., Ch.B.—*Final Examination* (*Section I*). *Pass :* R. I. Bodman, M. P. Bourke, (Mrs.) E. M. Carey, (Mrs.) I. M. M. Codd, Margot J. Copland, Margaret P. Drew, J. Eskell, E. C. Hamlyn, W. A. Heaton-Ward, Kathleen C. Iles, Flavia Z. L. B. James, P. A. James, A. S. Jones, Christine M. H. Jones, D. M. M. Jones, M. H. Kerby, (Mrs.) L. M. Leitch, R. Maggs, Mildred I. Pott, R. J. Sandry, F. I. Tovey (1, 2), (Mrs.) M. J. Williams (2), Elizabeth N. R. Wilson.

M.B., Ch.B.—*Final Examination. Pass :* J. E. Beviss, M. P. Bourke, A. G. P. Davies (3), Mercia J. Griffiths, C. H. Gurd, Elisabeth Hodson, (Mrs.) L. M. Leitch, D. E. Olliff, Mildred I. Pott (4), D. A. Sarsfield, S. S. Short (5), T. R. Stephens. *In Group II only :* (Mrs.) M. J. Noakes, Elizabeth N. R. Wilson.

B.D.S.—*First Examination. Pass : In Chemistry :* G. D. Pamely. *In Chemistry and Biology :* L. K. Walden.

B.D.S.—*Second Examination. Pass :* P. J. Blyth, E. J. R. Morgan (6), P. J. Sheldrick, W. Watson.

B.D.S.—*Third Examination. Pass :* A. N. R. Gibson. *In Dental Mechanics, etc. :* J. M. Allen.† *In Dental Anatomy only :* G. A. J. Comyn (7), D. C. Sara, A. F. J. Smith.

B.D.S.—*Final Examination. Pass :* F. G. Lloyd. *In Section II only :* Mrs. M. J. Miller.†

L.D.S.—*First Examination. Pass:* T. C. Hughes, D. A. Pearce.

L.D.S.—*Second Examination. Pass:* A. D. Baxter, L. G. D. Brown, B. L. Evans.

L.D.S.—*Third Examination. Pass:* K. W. Bowry, J. F. V. Woolley. *In Dental Mechanics*, etc.: L. H. Valentine,† *In Dental Anatomy:* T. W. Beer,† Mary P. Hazell.

L.D.S.—*Final Examination. Pass:* R. L. Yendall. *Section II (Dental Surgery):* R. D. Hepburn,† N. W. Leech,† L. Murray,† B. N. Neilson,† B. A. Oliver.† *Section I:* J. W. B. Kay, F. E. R. Williams.

University of Cambridge.—M.B.—*Final Examination. Part II* (Principles and Practice Physics, Pathology and Pharmacology): *Pass:* Helen M. Comely.

University of Oxford.—B.M.—*Second Examination* (Medicine, Surgery and Midwifery): *Pass:* Sheila M. Tangye.

Society of Apothecaries, London.—*Pre-Medical and Primary Examinations for L.M.S.S.A.: Pass:* A. J. E. Richards,* (Chemistry, Biology).

Royal College of Surgeons of England.—*Final Examination, L.D.S. Pass: Part I:* F. M. Warren. *Part II:* F. M. Warren, S. Phillips.

Conjoint Board.—L.R.C.P., M.R.C.S.—*First Examination. Pass:* Janet Baker (8), Elizabeth Bryant (9, 10), (Mrs.) E. M. Carey (8), P. J. Chapman (9, 10), (Mrs.) I. M. M. Codd (8), Margot J. Copland (8), Jyotikana Datta (8), (Mrs.) M. J. Noakes (8), D. Purnell (9, 10), Dorothy M. Reece (9, 10), Margaret E. J. Richards (10), A. J. F. Saxton (8), Rae H. Scott (9, 10), T. Straton (9, 10), Rosemary V. Styles (9, 10), W. B. Tindall (9, 10).

L.R.C.P., M.R.C.S.—*Final Examination. Pass:* Janet Baker (11, 12), M. P. Bourke (11), F. J. Goddard (13),† Elisabeth Hodson (11, 12, 13), A. J. R. Hudson (14),† W. G. Hunt (12, 14),† D. J. Jones (12, 14),† P. H. Keppich (12), E. J. Perks (13),†* Mildred I. Pott (12), J. T. Rendle-Short (12), A. J. F. Saxton (11), G. Steiner (12),†* I. F. R. Sutherland (11, 13, 14), Dorothy H. Thorne (13, 14),† (Mrs.) Dorothy Willoughby (11, 12).

* Former Student.
† Completing Examination.
(1) With Distinction in Materia Medica, Pharmacy, etc.
(2) With Distinction in Pathology and Bacteriology.
(3) With Distinction in Forensic Medicine and Toxicology.
(4) With Distinction in Public Health.
(5) With Distinction in Surgery.
(6) With Distinction in Anatomy.
(7) With Distinction in Dental Anatomy.
(8) Pharmacology and Materia Medica.
(9) Anatomy. (10) Physiology. (11) Pathology.
(12) Midwifery. (13) Surgery. (14) Medicine.

Bristol Medico-Chirurgical Society

President.

C. CORFIELD, M.D. Durh.

President-Elect.

Committee.

Ex-Officio
- J. A. NIXON, *C.M.G.*, B.A., M.D. Cantab., F.R.C.P. (Editor of *Journal*).
- (Vacant), (Hon. Librarian).

Elected.

L. A. MOORE, M.B., Ch.B. Brist. (Ex-President).
R. C. CLARKE, *O.B.E.*, M.B., Ch.B.Brist.
H. H. CARLETON, M.A., M.D., B.Ch.Oxon.
A. L. TAYLOR, M.D. Lond.
P. S. MARTIN, *M.C.*
T. MILLING, M.B., Ch.B. Belf.
W. V. WOOD, *M.C.*, B.A. Cantab.
H. L. SHEPHERD, M.B., Ch.M. Brist.
W. A. JACKMAN, F.R.C.S.

Honorary Secretary.

R. V. COOKE, Ch.M.

Honorary Treasurer.

A. E. ILES, *O.B.E.*, M.B., B.S. Lond., F.R.C.S.

University Library Sub-Committee.

A. R. SHORT, B.Sc., M.D. Lond., F.R.C.S.
C. BRUCE PERRY, M.D. Brist., F.R.C.P.
H. J. DREW SMYTHE, *M.C.*, M.S., M.D. Lond., F.R.C.S., F.R.C.O.G.

Medical Practitioners wishing to join the Society are requested to communicate with the Hon. Secretary, Mr. R. V. COOKE, Failand Lodge, Guthrie Road, Clifton. The Annual Subscription is £1 1s., payable to Hon. Treasurer.

Extracts from Journal By-laws.

4.—The *Journal* shall be delivered free to Subscribers and also to Members of the Society whose subscriptions are not in arrear.

6.—The Annual Subscription to the *Journal* is 9/–, payable to Hon. Treasurer.

Communications intended for insertion in the *Journal* should be sent to the Editor, Dr. J. A. NIXON, 7 Lansdown Place, Clifton, Bristol.

Books for Review and Exchange Journals should be sent to the Assistant Editor, *Bristol Medico-Chirurgical Journal*, Medical Library, The University, Bristol. Reviews should be returned with the books to Mr. E. WATSON-WILLIAMS, 65 Pembroke Road, Bristol 8.

Communications referring to the delivery of the *Journal* should be sent to the Hon. Treasurer, Mr. A. E. ILES, 87 Pembroke Road, Bristol 8.

Volumes of the *Journal* can be bound upon application to J. W. ARROWSMITH LTD., Quay Street, Bristol, price on request. The inclusive index for Volumes I—L may be obtained, price 3/– (postage extra).

Bristol Medico-Chirurgical Society

PAST PRESIDENTS

1874—75. FREDERICK BRITTAN, M.D., B.S. Dub.
1875—76. ROBERT WILLIAM COE.
1876—77. SAMUEL MARTYN, M.D. Ed.
1877—78. AUGUSTIN PRICHARD, M.D. Berlin.
1878—79. HENRY EDWARD FRIPP, M.D. Würzburg.
1879—80. WILLIAM MICHELL CLARKE.
1880—81. JOSEPH GRIFFITHS SWAYNE, M.D. Lond.
1881—82. EDWARD LONG FOX, M.D. Oxon.
1882—83. JAMES GEORGE DAVEY, M.D. St. And.
1883—84. WILLIAM JOHNSTONE FYFFE, M.D., B.A. Dub.
1884—85. GEORGE FORSTER BURDER, M.D. Aberd.
1885—86. WILLIAM HENRY SPENCER, M.D., M.A. Cantab.
1886—87. FRANCIS POOLE LANSDOWN.
1887—88. LEMUEL MATTHEWS GRIFFITHS.
1888—89. ROBERT SHINGLETON SMITH, M.D., B.Sc. Lond.
1889—90. NELSON CONGREVE DOBSON, Ch.M. Brist.
1890—91. SAMUEL HENRY SWAYNE.
1891—92. FRANCIS RICHARDSON CROSS, M.B. Lond., LL.D. Brist.
1892—93. EDWARD MARKHAM SKERRITT, M.D., B.S., B.A. Lond.
1893—94. JAMES GREIG SMITH, M.B., C.M., M.A. Aberd., F.R.S.E.
1894—95. ALFRED JAMES HARRISON, M.B. Lond.
1895—96. ARTHUR WILLIAM PRICHARD.
1896—97. ALFRED EDWARD AUST LAWRENCE, M.D., C.M. Aberd.
1897—98. JOHN EDWARD SHAW, M.B., C.M. Ed.
1898—99. ROBERT ROXBURGH, M.B. Ed.
1899—00. WILLIAM HENRY HARSANT.
1900—01. DAVID SAMUEL DAVIES, M.D. Lond.
1901—02. BARCLAY JOSIAH BARON, M.B., C.M. Ed.
1902—03. GEORGE MUNRO SMITH, M.D. Brist.
1903—04. JAMES PAUL BUSH, C.M.G., C.B.E., Ch.M. Brist
1904—05. REGINALD EAGER, M.D. Lond.
1905—06. JOHN DACRE.
1906—07. JAMES TAYLOR.
1907—08. HENRY WALDO, M.D., C.M. Aberd.
1908—09. JOHN MICHELL CLARKE, M.D., M.A. Cantab.
1909—10. JAMES SWAIN, C.B., C.B.E., M.D., M.S. Lond.
1910—11. BERTRAM MITFORD HERON ROGERS, M.D., B.Ch., B.A. Oxon.
1911—12. CHARLES ALEXANDER MORTON.
1912—13. WALTER CARLESS SWAYNE, M.D., B.S. Lond. and Brist.
1913—14. PATRICK WATSON-WILLIAMS, M.D. Lond., M.D. (Hon. Causa) Brist.
1914—15. WILLIAM HARRY CHRISTOPHER NEWNHAM, M.A., M.B. Cantab.
1915—16. GEORGE PARKER, M.A., M.D. Cantab., LL.D. Brist.
1916—17. FRANCIS HENRY EDGEWORTH, M.A., M.D. Cantab., D.Sc. Lond.
1917—18. FREDERICK LACE.
1918—19. ROBERT GUTHRIE POOLE LANSDOWN, M.D., B.S. Durh.
1919—20. I. WALKER HALL, M.D., Ch.B. Vict.
1920—21. LEOPOLD ERNEST VALENTINE EVERY-CLAYTON, M.D. Lond.
1921—22. CYRIL HUTCHINSON WALKER, B.A., M.B. Cantab.
1922—23. JOHN ALEXANDER NIXON, C.M.G., B.A., M.D. Cantab.
1923—24. JOHN LACY FIRTH, M.D., M.S. Lond.
1924—25. JOHN ODERY SYMES, M.D. Lond.
1925—26. THOMAS CARWARDINE, M.S. Lond.
1926—27. ARTHUR LAUNCELOT FLEMMING, M.B., Ch.B. Brist.
1927—28. WALTER KENNETH WILLS, M.A., M.B., B.Ch. Cantab.
1928—29. HENRY LAWRENCE ORMEROD, M.D., B.Ch. R.U.I.
1929—30. CHARLES FERRIER WALTERS.
1930—31. DAVID CHARLES RAYNER, Ch.M. Brist.
1931—32. JOHN ROGER CHARLES, M.A., M.D. Cantab.
1932—33. ERNEST WILLIAM HEY GROVES, M.D., M.S., D.Sc., B.Sc. Lond.
1933—34. HERBERT ELWIN HARRIS, B.A., M.B. Cantab.
1934—35. A. RENDLE SHORT, B.Sc., M.D. Lond.
1935—36. ARTHUR ERNEST ILES, O.B.E., M.B., B.S. Lond.
1936—37. RICHARD CHRISTOPHER CLARKE, O.B.E, M.B. Lond.
1937—38. CLIFFORD A. MOORE, M.B., M.S. Lond.
1938—40. LEONARD AUGUSTUS MOORE, M.B., Ch.B. Brist.
1940—41. CHARLES CORFIELD, M.D. Durh., Barr.-at-Law.
1941—42.
1942—43.

1943.

LIST OF SUBSCRIBERS

TO THE

Bristol Medico-Chirurgical Journal.

HONORARY MEMBER OF THE SOCIETY.

SWAIN, JAMES, *C.B.*, *C.B.E.*, M.D., M.S. Lond. .. .. .. Wyndham House, Easton-in-Gordano.

SUBSCRIBERS.

*Those marked * are Members of the Society.*

*ADAMS, A. W., M.S. Lond.	Elton House, Clifton, Bristol 8.
ADAMS, J. B	Kent Lodge, Eastbourne.
*ADAMS, S. B., Ph.D., M.B., Ch.B. Brist. ..	Clapton Hill, near Portishead.
*ALDWINCKLE, HELEN M., M.B., Ch.B. Brist...	23 Rockland Road, Downend, Bristol.
*ALEXANDER, A. J. P., M.D. Belf.	Winsley Sanatorium, near Bath.
*ALEXANDER, D. A., M.B., Ch.B. Vict.	112 Pembroke Road, Clifton, Bristol 8.
ALEXANDER, G. L., B.A., M.B., B.Ch. Cantab.	West African Medical Service, Laura, via Accra, Gold Coast.
*ALFORD, A. F., M.B., Ch.B. Brist.	Board of Education, Belgrave Square London, S.W.1.
ALFORD, H. J., M.D. Lond.	4 Park Terrace, Taunton.
ASHTON, L. P., M.B., Ch.B. Brist.	Kapsowar, P.O. Eldoret, Kenya, East Africa
*AUBREY, T., M.B. Lond.	Bitton, near Bristol.
*BAIN, W.	1 Greville Road, Southville, Bristol 3.
*BAKER, LILY A., M.D., B.Ch., B.A.O., R.U.I.	23 Pembroke Road, Clifton, Bristol 8.
BALL, Mrs. J. J.	St. Leonard's Vicarage, Redfield, Bristol 5.
*BARBER, M. C., M.B., Ch.B. Brist.	Ingledene, High Street, Staple Hill, Bristol.
*BARBOUR, Lieut.-Col. R. F., R.A.M.C. ..	13 Old Sneed Road, Stoke Bishop, Bristol.
*BARKER, G. H., M.D., B.Sc. Lond.	124 Redland Road, Bristol 6.
*BATES, R. M.	Purdown House, Stapleton, Bristol 5.
*BAXTER, URSULA, M.B., Ch.B. Brist.	167 Wells Road, Knowle, Bristol 4.
*BAXTER, V. T., M.B., Ch.B.	167 Wells Road, Knowle, Bristol 4.
*BEATSON, D. H., M.B., Ch.B. Brist.	8 Richmond Park Road, Clifton, Bristol 8.
*BELL, R. J. IRVING	5a Oakfield Road, Clifton, Bristol 8.
*BERGIN, F. G.	31 Oakfield Road, Clifton, Bristol 8.
*BERRY, R. J. A., Prof., M.D., C.M. Edin. ..	9 Derby Street, Ormskirk, Lancs.
*BIRRELL, J. A., M.D., B.S. Lond.	1 Victoria Square, Bristol 8.
BLACKETT, J. F., M.D., B.S. Lond.	Hamsterley, Bloomfield Park, Bath.
BLETCHLY, G. PLAYNE, M.B. Lond.	c/o Lloyds Bank, Nailsworth, Glos.
*BODMAN, A. P., M.B., Ch.B.	5 Hurle Crescent, Clifton, Bristol 8.
*BODMAN, F. H., M.D., Ch.B. Brist.	2 Redland Court Road, Bristol 6.
BOLT, R. F.	70 Great Russell Street, London, W.C.1.
*BOULTON, B. J., M.B., Ch.B. Brist.	Ham Green Hospital, Pill, near Bristol.
*BOWN, NAOMI J., M.B., Ch.B. Brist.	The Corner, Nailsea, Somerset.
*BRADBEER, E. G., M.B., Ch.B. Brist.	13 Percival Road, Bristol 8.
BRASHER, C. W. J., M.D.	Murivance, Nether Stowey, Somerset.
*BRINCKMAN, WINIFRED P., M.B., Ch.B. Brist.	2 Clifton Park, Bristol 8.
*BRITTON, R. B., M.B., B.S. Lond.	33a Whiteladies Road, Clifton, Bristol 8.
*BROCKLEHURST, R. J., M.A., D.M. Oxon. ..	The University, Bristol 8.
BROWN, J. E., M.B., Ch.B. Brist.	Coulthurst Villa, Brives Road, Maraval, Trinidad, B.W.I.
BRYAN, C.	44 Nevil Road, Bishopston, Bristol 7.
*BURGES, R.	Druid's Mead, Stoke Bishop, Bristol 9.
*BUSH, G. B., M.B., Ch.B. Brist.	Litfield House, Clifton, Bristol 8.

*CAIRNS, F. J.	Devon House, Whitehall Road, Bristol 5.
CAMERON, MARGARET, M.B., Ch.B.	1 Dean Lane, Bristol 3.
*CAPPER, W. M., M.B., B.S. Lond.	Litfield House, Clifton, Bristol.
*CAREY, R. S., *O.B.E.*, B.A. Cantab.	502 Bath Road, Brislington, Bristol 4.
*CARLETON, H. H., M.A., M.D., B.Ch. Oxon.	1 Lansdown Road, Clifton, Bristol 8.
*CASSON, E., M.D., Ch.B. Brist.	Mount Pleasant, Clevedon.
*CHAMBERS, E. R.	9 Clifton Park, Clifton, Bristol 8.
*CHARLES, J. R., M.A., M.D. Cantab.	Litfield House, Clifton Down, Bristol 8.
*CHITTY, H., M.S. Lond.	Naish House, Clapton-in-Gordano.
*CHRISTOFFERSON, P. E., M.B., Ch.B. Brist.	14 Oakfield Road, Clifton, Bristol 8.
*CLAREMONT, L. E., M.D.S. Brist.	5 Rodney Place, Clifton, Bristol 8.
*CLARK, DENNIS O.	168 Milton Road, Bristol Road, Weston-super-Mare.
*CLARKE, R. C., *O.B.E.*, M.B., Ch.B. Brist.	Harley Lodge, Clifton Park, Bristol 8.
*COATES, H.	Notts County Mental Hospital, Radcliffe-on-Trent.
*COCHRANE, J. H.	11 Bryant's Hill, St. George, Bristol 5.
*COLLINGWOOD, F. C., M.B., Ch.B. Brist.	c/o C.M.O., British Airways, 20 College Road, Clifton 8.
*COOKE, ELIAZBETH M., M.D. Lond.	53 Queen's Court, Clifton 8.
*COOKE, R. V., Ch.M Brist.	Litfield House, Bristol 8.
*COOKSON, R. G.	Clifton College, Erdiston, Bude.
COOMBS, N. C.	Romaldkirk, Barnard Castle, Co. Durham.
*COOPER, W. R.	13 Westfield Park, Redland, Bristol 6.
*CORFIELD, C., M.D. Durh.	5 Kensington Place, Clifton, Bristol 8.
*CORNER, BERYL, M.D., B.S. Lond.	3 Elton House, Rodney Place, Bristol 8.
*COSSHAM, W. L., M.B., Ch.B. Brist.	3 Claremont Road, Bishopston, Bristol 7.
*COURTNEY, R. M., M.B., Ch.B. Glasg.	Manor House, Southmead Road, Bristol
*COXON, BEATRICE	16 Richmond Hill, Clifton, Bristol 8.
*CRAIG, ANNE A., M.D., B.S. Lond.	35 Queen's Court, Clifton, Bristol 8.
*CROOK, B. A., M.B., Ch.B. Brist.	The Laurels, Timsbury, near Bath.
CROOT, H. J., M.B., B.S. Lond.	Royal Infirmary, Bristol 2.
*CROSSMAN, F. W., M.B. Durh.	White's Hill, Hambrook, near Bristol.
*DATTA, S. S., M.D. Brist.	Snowdon House, Fishponds, Bristol.
*DAVIES, E. D. D.	Standish House, Stonehouse, Glos.
*DAVIES, J. N. P., M.B., Ch.B.	Physiology Department, The University, Bristol.
*DELANEY, N., M.B., Ch.B. Manch.	The Meade, Bishopsworth, Somerset.
*DICKSON, W. A., M.D. St. And.	Standish House, Stonehouse, Glos.
*DISNEY, M., M.D. Lond.	On Active Service.
*DIX, C.	14 Mortimer Road, Clifton, Bristol 8.
*DIXON, T. B.	R.N. Sick Quarters, Dover.
*DODD, GRANTHAM, M.B., B.S.	42 Woodstock Road, Bristol 6.
*DUERDEN, J. R., M.B., Ch.B. Brist.	4 Cecil Road, Bristol 8.
*DUTTON, HILDA R.	405 Stapleton Road, Bristol 5.
*DYER, W. P.	West View, Westbury-on-Trym, Bristol.
*EGLINTON, J. H. C.	Street, Somerset.
ELLIOTT, F. P., M.B., C.M. Aberd.	113 Grove Road, Walthamstow, London. E.17.
*ELLIOTT, W. H. A., M.B., B.S. Lond.	29 Old Sneed Avenue, Stoke Bishop, Bristol 9.
*ELLIS, W. T.	Trenenna House, Shirehampton.
*EMERY, J. L.	Childrens' Hospital, Bristol 2.
*EVANS, G. M., M.B., Ch.B. Brist.	117 Ashley Road, Bristol.
*EYRE-BROOK, A. L., M.B., M.S. Lond.	The Cottage, Portishead.
*FALLON, Col. J.	35 Henleaze Gardens, Henleaze, Bristol.
*FAWN, G. F.	6 Oakfield Road, Clifton, Bristol 8.
*FELLS, G. R., M.B., Ch.B. Brist.	19 Southmead Road, Bristol.
*FELLS, R. R., M.B., B.S. Lond.	17 Mortimer Road, Clifton, Bristol 8.
*FENELEY, G. L., M.B., Ch.B. Brist.	Englewood, Falcondale Road, Westbury-on-Trym.

*FINZEL, H. F. M., M.D. Brist.	Nare House, Birchwood Road, St. Anne's Park, Bristol 4.
*FISHER, A. C., M.D. Brist.	Roan Antelope Mine, N. Rhodesia.
*FITZGIBBON, G. M., M.D. Lond.	75 Pembroke Road, Clifton, Bristol 8.
*FITZGIBBON, L. PRISCILLA, M.B., B.S. Lond.	75 Pembroke Road, Clifton, Bristol 8.
*FORRESTER-BROWN, MAUD, M.D., M.S. Lond.	22 Combe Park, Bath.
*FOSS, G. L., M.B., B.Ch. Cantab.	Cloud's Hill House, St. George, Bristol 5.
*FOX, F. E., B.A. Cantab.	Brislington House, Brislington, Bristol 4.
*FRASER, A. D., M.A., M.B., Ch.B. Glasg.	4 Alexandra Road, Clifton, Bristol 8.
*FRASER, D., M.B., Ch.B. Edin.	Westgate Dursley, Glos.
*FULLER, H. L.	9 Gay Street, Bath.
*GARDEN, R. R., M.A., M.B., B.Ch. Aberd.	9 Harley Place, Clifton, Bristol 8.
GARLAND, E. B., M.B., C.M. Edin.	114a Hampton Road, Redland, Bristol 6.
*GERRISH, NORMAN, M.B., Ch.B. Brist.	2 Station Road, Keynsham, Som.
*GIBBS, J. R.	48 Codrington Road, Bishopston, Bristol 7.
*GORHAM, A. P., M.B., Ch.B. Brist.	53 Westbury Road, Westbury-on-Trym.
*GORNALL, W. A., M.D. Brist.	Ulvik, Nailsea, near Bristol.
*GREEN, S. B., M.B. Lond.	The Black Wicket, Westbury-on-Trym.
*GREENLAW, MADGE E., M.B., Ch.B. Brist.	206 Redland Road, Bristol 6.
GRIFFITHS, CORNELIUS A.	35 Newport Road, Cardiff.
*GROVES, E. W. HEY, M.D., M.S., D.Sc. Lond.	25 Victoria Square, Clifton, Bristol 8.
*HAM, C. I., M.B., Ch.B. Brist.	89 Stonebridge Park, Eastville, Bristol.
*HARRIS, H. E., M.A., M.B., B.Ch. Cantab.	13 Lansdown Place, Clifton, Bristol 8.
*HARTLEY, GRACE, M.B., B.S. Lond.	49 Queen's Court, Clifton, Bristol 8.
*HEALES, J. N., M.B., Ch.B. Brist.	Holmcroft, Street, Somerset.
*HECTOR, F., M.D. Lond.	1 Victoria Square, Clifton, Bristol 8.
*HEMPHILL, R., M.D. Dub.	90 Cleeve Hill, Downend, near Bristol.
*HENDERSON, JAMES, M.B., Ch.B. Aberd.	The City Sanatorium, Yardley Road, Birmingham.
*HERAPATH, C. E. K., *M.C.*, M.D. Lond.	Ormlie, Clifton Down, Bristol 8.
*HEWER, Professor T. F., M.D. Brist.	Canynge Hall, Bristol 8.
*HILL, WINIFRED, M.B., Ch.B. Brist.	c/o Lloyd's Bank, Ilford.
*HOFFMAN, H. LOVELL, B.A., M.B., B.Ch. Cantab.	R.N. Hospital, Invergordon.
*HOLLAND, W. A. L.	10 Brunswick Square, Bristol.
*HOOKER, J. A., Colonel, M.B., Ch.B. Brist.	16 St. Edyth's Road, Sea Mills 9.
*HOSKEN, J. G. F.	Uley, Glos.
HOSPITAL, BRISTOL GENERAL (*Secretary*, T. W. GREGG).	
*HOUGHTON, LYDIA M., M.B., B.S. Lond.	74 Church Road, Redfield, Bristol 5.
*HOWELL, T. E.	6 Richmond Hill, Bristol 8.
*HUGHES, F. W. TERRELL, M.B., Ch.B. Brist.	Chew Magna, Somerset.
*HUGHES, MARGUERITE G., M.B., Ch.B. Brist.	Walnut Tree Farm, East Dundry, Som.
*HUNTER, F. S.	c/o Messrs. J. Wright & Sons Ltd., Publishers, 28 Orchard Street Bristol 1.
*HYATT, ANNIE W., M.B., B.S. Lond.	Merrymead, Shepton Mallet, Som.
*ILES, ANNA, M.B., Ch.B. Brist.	87 Pembroke Road, Clifton, Bristol 8.
*ILES, A. E., *O.B.E.*, M.B., B.S. Lond.	87 Pembroke Road, Clifton, Bristol 8.
INFIRMARY, BRISTOL ROYAL (*Secretary*, E. C. SMITH).	
INGLE, C. DURBAN	Somerton, Somerset.
*ISSERLIN, B.	2 College Road, Bristol 8.
*JACKMAN, W. A., *T.D.*, M.B., Ch.B. Brist.	15 Mortimer Road, Clifton, Bristol 8.
*JAMES, APRIL D., M.B., Ch.B. Brist.	(Address unknown.)
*JAMES, J. A., M.D. Lond.	Litfield House, Clifton Down, Bristol 8.
*JAMES, J. A., Senr.	Dusk, Elmlea Avenue, Stoke Bishop, Brist l, 9.
*JENKINS, F. G., M.B., Ch.B. Brist.	51 Redcliff Hill, Bristol 1.
*JENKINS, R. D.	The Copper Beeches, Almondsbury, near Bristol.
*JENKINS, P. K., M.B., Ch.B.	R.A.M.C.

*JOHNSON, R. G., M.B. Lond.	119 Redland Road, Bristol 6.
*JOLL, C. A., M.D., M.S. Lond.	64 Harley Street, London, W.1.
*JONES, MEGAN E.	Royal Infirmary, Bristol 2.
*JORDAN, L. R., M.B., Ch.B. Brist.	National Temperance Hospital, Hampstead Road, N.W.1.
*JOSCELYNE, P. C., M.B., Ch.B. Brist.	
*KEMM, N. F., M.B., B.S. Lond.	200 Redland Road, Durdham Park, Bristol, 6.
*KERSLEY, G. D., M.D.	6 The Circus, Bath.
KING, E. F.	2 Upper Wimpole Street, London, W.1.
*KINGSTON, S. H., M.B., Ch.B. Brist.	3 Whiteladies Road, Clifton, Bristol 8.
*KYLE, H. G., M.A., M.D., B.Ch. Oxon.	31 Westbury Road, Bristol.
*LACE, F	5 Gay Street, Bath.
LALONDE, T. P., M.B., Ch.B. Brist.	Wykeham House, Romsey, Hants.
*LEES, E. LEONARD, M.D., C.M. Edin.	28 Downs Park West, Bristol 6.
*LEGAT, R. EDDOWES, M.B., C.M. Edin.	Hampden, St. Briavels, Glos.
*LEWIS, F. J., M.B., Ch.B. Brist.	Canynge Hall, Bristol 8.
*LINTON, MARION S., M.B. Lond.	1 Brecon Road, Henleaze, Bristol.
*LISTER, A. E. J., M.B., B.S. Lond.	86 Pembroke Road, Clifton, Bristol 8.
*LOGAN, H. B.	Elmwood, Aberdeen Road, Cotham, Bristol 6.
*LOXTON, S. D., M.B., Ch.B.	
*LUCAS, J. E.	c/o 132 York Road, Bristol 3.
*LUCAS, J. J. S., M.D. Lond.	186 Wells Road, Knowle, Bristol 4.
*LUCAS, J. V.	186 Wells Road, Knowle, Bristol 4.
*LUCAS R. P., M.B., Ch.B. Brist.	15 Edgecumbe Road, Redland Bristol 6.
*MCKENZIE, W. G., *M.C.*	11 Bath Road, Reading.
*MACLACHLAN, A. M., M.B., Ch.B. Glasg.	65 Redcliff Hill. Bristol 1.
*MARSHALL, A. H., M.B., Ch.B. Brist.	281 Canford Lane, Bristol.
*MARWOOD, S. F., M.D., B.S.	Troy House, Kingswood, Bristol.
*MCLANNAHAN, J. G.	The Mount, Stonehouse.
*MACLAREN, CATHERINE J., M.B., Ch.B. Edin.	Hereford House, Clifton Down.
MACLEAN, SIR EWEN J., M.D., C.M. Edin.	12 Park Place, Cardiff
*MACLEOD, G., M.A. Glas., M.D., M.B.	Wargrave, Clevedon, Somerset.
*MARSHALL, A. H., M.B., Ch.B. Brist.	281. Canford Lane, Bristol.
MARSHALL, A. L., M.B., B.A. Cantab.	Laxfield, Woodbridge, Suffolk.
*MARTIN, P. S., *M.C.*	Victoria Quadrant, Weston-super-Mare.
*MATHESON, N. R., M.B., Ch.B.	37 Abbey Road, Westbury-on-Trym.
MIALL, C. L'O	Elm Hayes, Paulton, near Bristol.
*MILLING, T., M.B., Ch.B. Belf.	1 Vicarage Road, Southville, Bristol 3.
MOORE, C. A., M.B., M.S. Lond.	South Lodge, Kingsweston Road, Henbury Bristol.
*MOORE, L. A., M.B., Ch.B. Brist.	Hillsborough, Cotham Park, Bristol 6.
*MOORE, R. H., M.B., Ch.B. Brist.	White Cross Court, Wells Road, Bristol 4.
*MORGANS, C. C., M.B., Ch.B. Cantab.	65 Lower Redland Road, Bristol 6.
*MORRIS, L. N., M.B., Ch.B. Brist.	13 Belgrave Road, Clifton, Bristol 8.
*MUNDY, G. S., M.B., B.Ch. Brist.	Homewood, Coombe Dingle, Bristol.
*MYLES, Q. St. L., M.A., B.M., B.Ch. Oxon.	7 Apsley Road, Clifton, Bristol 8.
*NICHOLSON-LAILEY, J. R.	Elmfield House, South Road, Taunton.
*NIXON, DOREEN, M.B., B.S. Lond.	7 Lansdown Place, Clifton, Bristol 8.
*NIXON, J. A., *C.M.G.*, M.D Cantab.	7 Lansdown Place. Clifton, Bristol 8.
*NOBLE, J. I., M.B., Ch.B. Liverp.	102 Pembroke Road, Clifton, Bristol 8.
*NORMAN, R. M., M.D. Brist.	Highwood, Stapleton Park, Bristol.
*NOTT, WINIFRED, M.B., Ch.B. Brist.	Fassiefern, 8 Rylestone Grove, Stoke Bishop, Bristol 9.
*O'DONOHOE, MONICA A., M.B., Ch.B.	1 Beaconsfield Road, Bristol 8.
*ORMEROD, G. L. M.A., M.B., B.Ch. Cantab.	2 Henleaze Road, Westbury-on-Trym, Bristol.
*ORR-EWING, H. J., *M.C.*, M.D. Lond.	1 Beaufort Buildings, Clifton, Bristol 8.
*PALIN, A. G., B.M., B.Ch. Oxon.	Litfield House, Clifton Down, Bristol 8.
*PARKES, J. A., M.B., Ch.B. Liverp.	8 South Road, Redland, Bristol 6.

*PARKES, P. W. J.	164 Filton Avenue, Bristol 7.
PARKINSON, Lt.-Col. G. S., *D.S.O.*, R.A.M.C.	London School of Hygiene and Tropical Medicine, Keppel Street, London, W.C. 1.
*PARRY, R. H., M.B., B.S.Lond.	Public Health Offices, Bristol 1.
PARSONS, Sir J. H., M.B., B.S., B.Sc. Lond.	54 Queen Anne Street, London, W.
*PAUL, R. G.	23 Pembroke Road, Bristol 8.
*PAULI, C. H.	Pagan's Hill Farm, Chew Stoke.
*PERRY, B., M.D., Ch.B.Brist.	Canynge Hall, Clifton, Bristol 8.
PHELPS, P. C., M.B., Ch.B.	23 St. Alban's Road, Bristol 6.
*PHILLIPS, P., M.B., Ch.B. Brist.	Southmead Hospital, Bristol.
*PIRRIE, A. L., M.B., Ch.B. Glasg.	528 Kensington Hill, Bristol.
*POCOCK, J. A., M.A., M.B., B.Ch. Cantab.	75 Drayton Gardens, London, S.W. 10.
PORTER, C. P.	28 Mill Street, Kidderminster.
*POTTER, MABEL F., M.B., Ch.B. Brist.	79 Pembroke Road, Clifton, Bristol 8.
*POWELL, H. F., M.D. Brux.	Ellenborough Park, Weston-super-Mare.
*PRICE, C. H. G., M.B., Ch.B. Brist.	Claverham House, Claverham, Yatton.
*PRICE, N. L., M.B., Ch.B. Brist.	Litfield House, Clifton Down, Bristol 8.
*PRIDIE, K. H., M.B., B.S. Lond.	58 St. John's Road, Clifton, Bristol 8.
*PROWSE, D. C., M.B., Ch.B. Brist.	Wigmore House, Thornbury, near Bristol.
*RANKIN, P. C., M.B., Ch.B. Glasg.	Lawrence Hill House, Bristol.
*RAYNER, D. C., Ch.M. Brist.	9 Lansdown Place, Clifton, Bristol 8.
*ROBERTS, J. A. F., M.A. Cantab., M.B., Ch.B., D.Sc. Edin.	Stoke Park Colony, Bristol.
*ROBERTSON, D., M.B., Ch.B. Edin.	2 Knowle Road, Knowle, Bristol 4.
*ROBERTSON, L. G., M.B., Ch.B.	162 Redland Road, Bristol 6.
*ROGERS, H., M.D. Brist.	91 Old Park Ridings, Grange Park, N.21.
*ROLFE, R., B.A., M.B., B.C. Cantab.	Park House, St. Andrew's Road, Avonmouth.
*ROWLANDS, R. D.	Connaught Military Hospital, Knaphill, Surrey.
*ROWLEY, A. T.	13 Walliscote Road, Weston-super-Mare.
*RUDOLF, MAJOR G. DE M.	R.A.M.C.
*RYAN, P. B., M.B., Ch.B.	43 Nevil Road, Bishopston, Bristol.
*SAMPSON, O. E. L., M.B., Ch.B. Brist.	77 Stackpool Road, Bristol 3.
*SCARFF, G., M.B., Ch.B. Edin.	83 Pembroke Road, Clifton, Bristol 8.
*SHEPHERD, H. L., M.B., Ch.M. Brist.	79 Pembroke Road, Clifton, Bristol 8.
*SHORT, A. R., B.Sc., M.D., B.S.Lond.	69 Pembroke Road, Clifton, Bristol 8.
*SMITH, T. W., M.D. Lond.	6 Oakley, Claverton Down, Bath.
*SMYTHE, H. J. D., *M.C.*, M.D., M.S Lond.	On Active Service.
*SNAWDON, J. W. E., M.B., Ch.B., B.D.S.	Litfield House, Clifton, Bristol 8.
*SOLTAU, H. K. V., M.D. Lond.	19 The Avenue, Clifton, Bristol 8.
*SOMERS, MARY A. E.	2 Ashcombe Road, Weston-super-Mare.
*SPOOR, A., M.B., B.Ch. Cantab.	The Hydro, Bristol 1.
*STEPHEN, R. J.	92 Redland Road, Bristol 6.
*STROVER, H. W. M., *O.B.E.*, M.B., Ch.B. Aberd.	90 Redland Road, Bristol 6.
*STRUTHERS, A. J., M.B., Ch.B. Glasg.	100 Church Road, Redfield, Bristol 5.
*STRUTHERS, GEO., M.B., Ch.B. Glasgow	100 Church Road, Bristol 5.
*SUTTON, G. E. F., M.D. Lond.	1 Pembroke Road, Clifton, Bristol 8.
*SYMES, J. O., M.D. Lond.	6 Pembroke Vale, Clifton, Bristol 8.
*TALLACK, MAJOR R. J. K., R.A.M.C.	5th (Kenya) Field Amb., A.P.O., E.A. Command.
*TASKER, D. G. C., M.B., M.S. Lond.	9 College Fields, Clifton, Bristol 8.
*TAYLOR, A. L., M.D. Lond.	The General Hospital, Bristol 1.
TAYLOR, A. L.	The Royal Infirmary Bristol 2.
THIN, J.	54 and 55 South Bridge, Edinburgh.
*TODD, A. T., *O.B.E.*, M.D. Edin.	Royal Park House, Clifton, Bristol 8.
TRINICK, RICHARD H.	42 Cherry Valley Gardens, Belfast.
TRIPP, DOROTHY M. H.	Mission Hospital, Karim Nagar, Nizam's Dominions, South India.
*TRIST, J. R. R., *M.C.*	120 Henleaze Road, Henleaze.
*TRYON, VICTORIA S., M.B., Ch.B. Brist.	3 Harley Place, Clifton, Bristol 8.

*WAGSTAFFE, E. M., M.B., Ch.B.	Winford Orthopædic Hospital.
*WANSBROUGH, T. B., M.B., Ch.B. Brist. ..	23 Pembroke Road, Clifton, Bristol 8.
*WALKER, CYRIL H., B.A., M.B. Cantab. ..	Harewood, Clapton-in-Gordano, Som.
*WALTERS, C. F.	Downover, Walton Down, near Clevedon.
WAKE, S. C., M.B., Ch.B. Brist.	"Stanhope," Bideford, N. Devon.
*WARD, H. W.	Chipping Manor, Wotton-under-Edge.
*WARREN, R., M.A., M.D. Oxon.	Heathgates, Weston-super-Mare.
*WATSON-WILLIAMS, E., *M.C.*, B.A., M.B. Cantab., Ch.M. Brist.	65 Pembroke Road, Clifton, Bristol 8.
WATTS, J. B. V.	Frantzina's Rust, Barberton, Transvaal, S. Africa.
WEDDELL, C. W.	Boydville, 46 Miller Street, West Melbourne, Australia.
*WIGODER, SYLVIA, M.A., M.D., Ph.D.	General Hospital, Bristol 1.
*WILBOND, R. G.	76 Chesterfield Road, St. Andrew's Pk., Bristol.
*WILLIAMS, I., M.B., Ch.B. Brist.	"Ardrem," Hill View, Henleaze, Bristol.
*WILLIAMS, S. R., M.B. Lond.	Buckfastleigh, Devon.
*WILLWAY, F. W., M.D., M.S. Lond.	Bristol Royal Infirmary.
*WOOD, D.	105 Pembroke Road, Clifton, Bristol 8.
*WOOD, URSULA, M.B., Ch.B.	Henley Lodge, Yatton, Som.
*WOOD, W. V., *M.C.*, B.A. Cantab.	Henley Lodge, Yatton, Som.
*WOODMAN, DOROTHY, M.D. Lond.	Clifton Hill House.
*WOOLLEY, W., M.B., Ch.B. Brist.	239 Cranbrook Road, Redland.
*WRIGHT, A. J. M., M.B., B.S. Lond.	Harley Cottage, Clifton Park, Clifton, Bristol 8.
*WRIGHT, WINIFRED M., M.B., B.S. Lond. ..	Merrymead, Shepton Mallet, Som.
*ZEALAND, L., M.D. Man.	Brecon Lodge, Westbury-on-Trym, Bristol.

HONORARY VISITING MEMBERS.

BRIDGES, MAJOR ARTHUR BRODIE HAMILTON, R.A.M.C., *O.B.E.*

COLSON, SURGEON REAR-ADMIRAL HENRY ST. CLAIR, *O.B.E.*, M.D. Lond.

WHITBY, COLONEL LIONEL ERNEST HOWARD, *A.M.S.*, *C.V.O.*, *M.C.*, M.D. Cantab.

WORTHINGTON, COLONEL FRANK, *A.M.S.*, *D.S.O.*, *O.B.E.*, M.B., B.Ch. Cantab.

And their staffs.